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NEWSPAPER

NEWS IN BRIEF

Bill Would Extend Tax-Free Software

CW West Coast Bureau

SACRAMENTO, Calif. – A bill that would continue permanently California's moratorium on the taxing of software has reached the state assembly where it is expected to be passed. It would then go to the Senate where modification attempts are likely.

Emergency legislation enacted last year exempted certain software from taxation as tangible personal property.

But the exemption runs out after this year and groups opposed to the software tax have been arguing that the exemption, as it is, is too ambiguous.

IRS Figures Find Public Making Fewer Tax Errors

WASHINGTON, D.C. – Computer verification of tax returns for fiscal year 1972 indicates that the general public is either following instructions better or becoming better mathematicians, the Internal Revenue Service said last week.

During that year there were errors in 3.8 million returns, according to the computer verification, or an error in one out of every 20 filed compared to one out of every 16 in 1971 and one out of every 12 in 1970, IRS said.

Guard Looking for Maturity?

HARTFORD, Conn. – Two lookalike computer printouts inadvertently led to a rather interesting recruitment drive by the Connecticut National Guard recently.

Among those receiving letters from the Guard stating, "I have just learned of your release from a successful tour of active duty," was 74-year-old Frank H. Smith of Hartford, who was discharged from the Army in 1918 at the end of World War I.

Smith is now an adjutant in an American Legion post and was included on a list of all post adjutants which was sent to the Guard from the Connecticut headquarters of the American Legion. This list was apparently mixed up with a list of all state men recently discharged from the military, officials said.

On the Inside This Week

Tornado Levels DP Center, 90 Hours Later CPU Is Up

Reconstruction Southern Style

By Don Leavitt
Of the CW Staff

CONYERS, Ga. – Ninety hours after its original site was struck by a tornado, Lithonia Lighting's 360/50 was "up and running" in a temporary room hurriedly built in a local warehouse.

The rapid recovery was made possible, according to DP manager Charles Darnell, by hard work by his own staff, an "impressive dedication" to the job by IBM engineers – even though the CPU was on third-party lease from Randolph Computer Co. – and good audit trails provided by his teleprocessing software.

The tornado hit at 6 p.m. on a Saturday and left the DP center a shambles. A water main ruptured above the CPU flooding it and the surrounding area. Sections of the raised floor were scattered "all over the place."

Darnell was one of the first Lithonia employees on the scene after the storm. He could do nothing except cover the equipment with plastic sheeting to prevent further water damage.

Dirty Disk

Debris was everywhere, and so were the company's tapes and disks. Darnell found the system disk pack in a puddle of dirty water, and tapes were recovered outside where the computer room had been. He locked the disks and tapes in the president's desk – "which happened to be the only secure place left."

IBM engineers were on-site early Sunday morning working to determine the actual damage. During the next 70-odd hours they moved the equipment to a Lithonia warehouse that was still in good shape, though only two miles away. Working with heat lamps and fans, they cleaned and dried all the parts, then reassembled them.

Meanwhile Lithonia personnel built a room within the warehouse to serve as a temporary home for the DP operations. Largely plywood sheeting, the new shelter includes a window-sized air conditioning unit to maintain reasonable op-

(Continued on Page 2)

User's Tale of Woe

From Delivery To Sign-Off... It's a Long Time

By Ronald A. Frank
Of the CW Staff

MERRIMACK, N.H. – What are the rights of a user between the delivery date of his system and the day he officially accepts the equipment?

There is no easy answer, especially when an installed system has been operating off-rent for more than seven months due to operating problems and differences between the user and his vendor.

This is the situation facing Compro, Inc., a small minority-owned service bureau here. The user took delivery of a Control Data 3200 disk-oriented system in August 1972 after obtaining a contractual commitment from CDC that it would provide certain capabilities before the user was obligated to sign off and begin rental payments.

Included in the contract were a Pert time-scheduling software package, IBM-compatible Cobol and a communications interface to the 3200 for Viatron terminals.

Backup Promised?

In addition, the vendor gave Compro verbal assurance, according to Compro, that a backup system would be available somewhere in the area in case of maintenance problems. It was apparently agreed

(Continued on Page 2)

Old Autoflow Gets New Look

PRINCETON, N.J. – Autoflow II has been introduced by Applied Data Research (ADR) as a successor to the company's original flowcharting package. The new software has a range of interrelated facilities aimed at solving problems by providing documentation in all phases of program development.

In addition to expanded language-processing capabilities within the 360/370 Assembly and Cobol flowcharting processors, Autoflow II may now include two separate-cost options.

The Cross-Program Auditor (CPA) option extends the system as an inter-program analysis and reporting tool.

At the same time, an Extended Test Compositor (ETC) feature is being added to handle production of all types of textual documentation.

Though originally intended to sup-

(Continued on Page 4)

'$10 Billion Not Enough'

Birth of 370: a Look Back

The first release of previously secret IBM documents in connection with the various court cases occurred when Greyhound Computer Corp. appealed the dismissal of its suit against IBM. Included with the appeal brief was a set of exhibits which contained a selection of IBM records covering the 1962-1970 period. Events were described leading up to the adoption of the much higher purchase and maintenance costs by IBM when it released the System 370s in 1970.

What follows here is a three-part analysis of how and why the first questions of increased maintenance were brought forward, and a look at some interesting ramifications to the 370 maintenance pricing policy.

By Alan Taylor
Special to Computerworld

IBM's Data Processing Group (DPG), under IBM Corporate pressure in May 1969, had been asked to cut 1970 expenses by $100 million, but was trying to have Corporate reduce this cut by half. Even so, this would involve cutting back the DPG research on the coming 370 computers to a "no-growth level."

The reason behind the Corporate request was not that DPG's operations had been unprofitable. Indeed, over the eight-year period, while the System 360s had been developed and marketed, DPG's profit picture had averaged 29.5% of all

What was the role of the adjusted multipliers? Page 26
Is IBM risking a major fall? Page 28

revenues, or in absolute terms, DPG had made over $4 billion profit on sales of $14 billion.

Nor did the request have anything to do with some particular sin of the group.

The cut was to ensure that IBM's absolute profits reported in 1970 should not show an absolute profit decline from a 1968 peak.

1968 Profit Bulge

The basic problem was 1968 profits which had been higher than planned for by IBM. The high profit had come from customers buying 360s, systems which IBM would have preferred to keep as IBM property. IBM had thought it had these sales "contained" by the policy changes of 1965. But IBM forecasting had failed.

Chairman of the Board Thomas J. Watson Jr. had warned his stockholders about

Analysis

the 1968 bulge in profits, and internally had again planned to take action to reduce the volume of sales.

But the stockholders were complaining. They were writing letters to Watson objecting to his warnings. This they said, could keep the price of the IBM stock down.

Watson was listening to the complaints.

If the IBM 1970 profit figures somehow could be kept greater than the 1968 "bulge" figures, even though the purchase of equipment had been stopped, Watson would not expect to hear such criticism from the stockholders. No one saw how to increase revenues to do this – so the only alternative available was to cut expenses.

And so the instructions went out to cut the expenses. All told, throughout IBM,

(Continued on Page 24)

Delivery to Sign-Off ... a Long Time

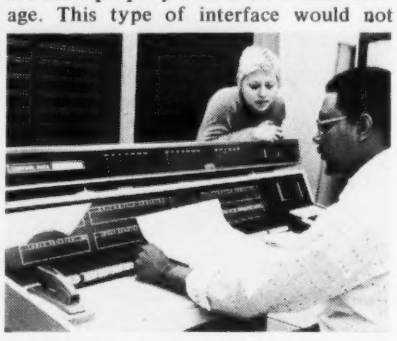
(Continued from Page 1)

that the 3200 would go on rental only when all the contract conditions had been met.

The user claims the Pert is not yet reliable so Compro rents outside time for its Pert runs. The Cobol software is operating but the conversion from IBM Cobol D to CDC Cobol had to be developed in-house by the Compro system staff.

The communications interface is not ready. "Whenever they have connected the Viatron terminals to the CPU, the rate of dropped records is very high," said Carl Findlay, Compro president.

Under the contract CDC agreed to provide a working interface so the Viatron terminals could be hardwired to the 3200. But CDC system representatives have told Compro that an Ack-Nack handshaking sequence is not needed. This would mean that the terminals interfaced to the CPU would constantly be sending data to the mainframe with no indication of whether the information had been received properly and entered into storage. This type of interface would not meet the terms of the contract, according to Findlay.



Carl Findlay, president of Compro, works on CDC 3200 system while Jackie Matte of the firm's systems staff checks progress.

The Viatron interface should not be a difficult problem for CDC, Findlay said, because CDC supplies nationwide maintenance and other field services to those users who still operate Viatron equipment.

The communications interface is the first step in a planned expansion phase for Compro that Findlay claims is now stalled. After the Viatron terminals are interfaced in local mode, Findlay plans to connect the Viatron terminals at his largest user sites so they can input their data directly into the 3200.

But even more important than the interface question is the recent operating failures of the 3200. In a recent period from March 23 through April 5, Findlay related, the 3200 was fully operational for only 50 hours out of a possible 312, or 16% uptime. And CDC has not been able to provide Compro with a backup 3200 as promised, he added.

The maintenance situation has become so bad that CDC last week agreed to sign a full-time resident custom engineer to the Compro installation to increase preventive maintenance in an attempt to improve system reliability.

"I wouldn't dare run a payroll for a customer," Findlay said, "the system is too unreliable." Among the failures that have occurred in recent weeks are a total loss of power that blew "more than 30 fuses" when a CDC CE attempted to switch the system to its alternate power source. This failure caused a disk crash that resulted in eight hours of downtime, Findlay declared.

The card reader has been rebuilt at least twice, Findlay said, and an automatic shutoff switch for the card unit ordered last year has still not been installed. Earlier this year, a variable resistor in the CPU caught on fire and had to be replaced. It took three days to replace the resistor and get the system back up.

The maintenance experts at his site have told Findlay unofficially that he has just about the worst operating uptime figures they have seen, Findlay stated.

In addition, the 3200 is operating at only a fraction of the performance promised by CDC, according to Findlay. The 3200 is now operating at about 25% to 50% of the performance of the IBM 360/30 that Compro had used at an outside service bureau before the in-house installation.

Between the initial installation and now, CDC has consistently tried to get rental payments but Compro has refused. Findlay did make one concession in December when he agreed to begin monthly maintenance payments.

Additionally, the vendor refused to install a tape system until Findlay agreed to sign off the system, he claimed. But Findlay threatened to go to Minneapolis to see CDC management about his problems and the tapes were delivered shortly thereafter.

Findlay is no newcomer to CDC equipment. He worked as a CDC systems analyst for some time before beginning his own business with the help of a Small Business Administration loan.

Among Compro's existing clients is New Hampshire's Hillsborough County. "The welfare checks for the county have been late for three months and the officials are upset," Findlay admitted.

Lately, there has been little demand that Compro sign off the 3200. Early in March a CDC official wrote Compro that all contractual obligations had been met, and called for Findlay to sign off by March 22.

The Compro chief invited the CDC official by phone to visit his site. "I told him that if he felt the equipment and the communications interface were operating properly, we would sign off the system," Findlay said. The CDC representative has yet to arrive.

Last week when CDC assigned the full-time CE to the site to correct the downtime problems, the subject of sign off and monthly rentals never came up.

A CDC spokesman said the company had no comment on the situation.

8/72	3200 delivered
9/72	incorrect Fortran compiler installed with Pert
10/72	Cobol compiler problems reported to CDC
11/72	Cobol compiler problems fixed
1/73	first in a series of card reader problems
1/73	problems with sort routine
2/73	fire in CPU, three-day outage
3/73	disk problem, seven-day outage
4/73	power failure and disk crash, system down eight hours
4/73	CDC assigns full-time CE to site

. . . some dates that Findlay remembers

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Tornado Hits, Center Reconstructs

(Continued from Page 1)

erating conditions.

Power lines were installed and the new center began working the following Wednesday afternoon.

IBM Plans Ahead

IBM's support has included shipping a backup 360/50 to the new location "just in case there is water damage that we don't know about yet," Darnell said.

The backup unit was delivered just 10 days after the twister hit, and will remain available – apparently without cost to Lithonia or Randolph Computer – for 30 days or until Lithonia and the local IBM engineers say it can go.

While moving and restoring the hardware were vital, logical recovery of the company's records was just as important as far as Darnell was concerned. Happily, the Environ/I-Total data base management system Lithonia had been using made that part of the recovery "very easy," he said.

Environ/I is the teleprocessing monitor portion of the system and includes a transaction logging facility to protect the user against lost transmissions. Once he found that audit trail, Darnell knew exactly which messages had been received and serviced and which had not.

That meant, he explained, that by Monday, April 2, while Lithonia's own CPU was still down, the company was able to move its data base to a borrowed machine, determine what inventory had been lost, and generate reports for insurance purposes.

Meanwhile, outlying Lithonia locations were continuing their normal transmissions and these were being accumulated for processing as soon as the mainframe was ready.

Once the 360/50 was up again, the Total data base processing was fast enough, Darnell added, so that the central files were completely current by Saturday afternoon, just shy of one week after the storm hit.

That "probably wouldn't have been possible" with any other software support system, Darnell concluded.

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'Balance Privacy and Progress'

Credit Act Needs 'Strengthening'

Credit Reporting System Ills Defined, Charters Urged

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – Although the Fair Credit Reporting Act has improved credit reporting systems, there are still many problems with privacy of records in such computerized systems.

There are also major problems in the control of such systems, according to a report of the National Commission on Consumer Finance.

Because of this, the commission said Congress should "consider the eventual federal chartering" of such computer-based agencies "both to assure the accuracy and confidentiality of their credit information and to achieve open and economical access to their data."

Balancing Needs

The commission, in a recent report to the President and to Congress, said that "protection against the invasion of privacy in the computer age must be achieved by balancing the need to preserve privacy against the desire to maximize benefits of efficiency inherent in the new technology."

But at the present time, it noted, there are no legal guidelines upon which such a balancing can take place.

The commission noted that credit records in computer data banks might be treated so that "an invasion of privacy could not be established unless the complaint alleged that the private information was given publicly or communicated to the public at large.

"This requirement would probably prove to be an ineffective means of protection against computer invasion of privacy, since rarely would computer information be published."

Thus, the group said, "a different standard must be created that would limit the nature of the computer information disclosed as well as the audience to which it is disseminated."

In a separate opinion on the study, commission member Rep. Leonor K. Sullivan (D-Missouri), said that while "the computer may be ready to take over a multitude of consumer transaction accounting chores," the public is "not yet ready for the computer."

The consumer credit industry must learn to "tame" the computer or at least provide adequate training to "the human beings who operate computers and those who initiate the harassments which result from computer errors," or the industry "will lose more in customer goodwill than it can ever gain in accounting efficiency," Sullivan stated.

In the future, credit decisions "will become increasingly less personal and more automated," making it essential for Congress to strengthen the Fair Credit Reporting Act, she felt.

Experience with the present measure, Sullivan said, shows that the Act should be amended to provide "clearcut authority to the Federal Trade Commission to issue compliance regulations which would have the force and effect of law," as was originally proposed by the bill, but defeated in the Senate.

In the area of control of computer-based credit information systems, the commission admitted serious questions do exist, and suggested that such systems might be best set up and regulated like public utilities.

Resolution of the issue of control "is critical to consumers' ability to obtain adequate amounts of credit at reasonable prices."

The present "deficient" system will probably become more deficient in the future, the commission said, just at the same time that retailers and other credit granters will come to rely more on the systems.

The demands for accurate and comprehensive information reinforce "pressures bringing about a consolidation of credit reporting agencies.

"First, the nature of the demand for information requires rapid storage and retrieval of information – a function that can be handled efficiently only by computers. Computer technology obviously favors large, centralized credit reporting agencies," the commission contended.

At the same time, it noted that the mobility of the general population makes it necessary that any credit reporting agency be nationwide in scope, or at least be able to tie into national systems.

In addition there is also a growing movement of banks into the credit area through electronic transfer of funds and bank credit card systems.

As this is happening, the commission said, banks will come to "own the major portion of the available credit information.

"Moreover, banks will be under no obligation to share credit information with competing firms whose own credit information will become increasingly less reliable as banks enlarge their share of the market."

Because of this, the report said, "it appears . . . that in the long run the credit reporting industry has the ingredients of a public utility."

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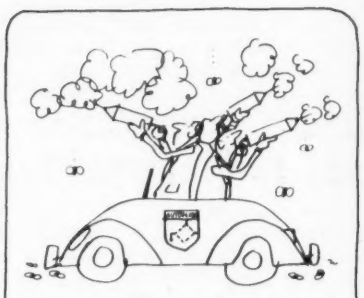
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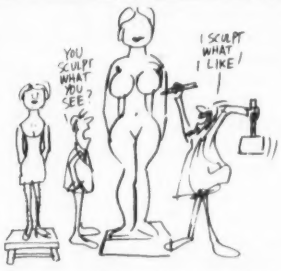

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With On-Line Data Entry Users Work to Keep System Up

By Molly Upton
Of the CW Staff

KANSAS CITY, Mo. – With the move to on-line data entry, one has to recognize the increased commitment to keep the system up, attendees at the Computer Caravan/73 workshop on on-line entry agreed.

There is a definite need for users to learn more of the intricacies of data retention in the event of power failures and disk crashes, one user pointed out.

Although workshop leader Dick Baker of Chemagro said his system loses only the last line of an entry with either kind of failure, another user from Champion said his firm's system retains all its records.

"You can keep the processor up, with backup power supply, but how about getting the data to the center?" Baker asked. This could become an increasingly serious problem as the volume of data transmitted increases, he observed.

Chemagro drew up a long-range plan and began installing CRTs – IBM 2260s – last November. It now has cash input and accounts payable on the system, he said.

In addition to the goal of an integrated information system the firm wanted to reduce much of the paperwork and put the data entry into the user departments as well as provide user inquiry.

Already through attrition the accounts payable department has been reduced by two persons, and Baker said the input accuracy has been excellent, less than .05%, although very little edit checking is done.

Extra Preparation

Since users are going to want "more and more" once such an on-line system with inquiry capability is implemented, the DP department should be aware of core requirements, and "know where it's going and tell the users what it's prepared to offer," Baker said.

Chemagro currently has an IBM 360/30 64K with two 2260s hardwired to the CPU. It has ordered an additional 30K of memory. The firm uses the IBM Lotus package, and is "very pleased" with it, according to Baker.

"There really are two types of maintenance the department should be concerned with, hardware maintenance and software for the CRTs," he said. He recommended that users "do a good job testing the software prior to implementing the program and system testing.

With Dbomp (data base organization and maintenance processor) and Lotus, Chemagro cannot directly update its data base, nor is it feasible to run inquiries on information as input, Baker said.

At noon the firm dumps the data from the work disk onto another non-Lotus file, preprocesses it and updates the files. This procedure also serves as a safeguard for possible disk failure, he said.

On-line entry, Baker said, has already eliminated receiving reports, and the firm is keeping purchase orders only temporarily. Eventually, there will be no paperwork on these two items, as all the information will be in the file.

One user with Hazeltine equipment found a fellow Hazeltine user who said he would be glad to explain how the Champion company manages to retain all its records in the event of a failure.

Champion uses Lotus but not Dbomp, and with some internal programming and a backup tape, the company's system automatically restarts. Champion uses a standard IBM work file, which permits rapid access, the user said, whereas Chemagro has to do some preprocessing to eliminate wait times when inquiring.

Chemagro's CRTs are shared by various user departments, so if there is a failure, those people have other work to do, noted Baker.

"We hope to eliminate the data center eventually, which is a realistic goal," Baker said.

How About No-Fault for DP?

SAN FRANCISCO – A recurring theme voiced across the country in Caravan panels on data communications concerns the placement of a "user's no-fault clause" in vendor contracts.

The need for this contract is most evident in multivendor installations where operations can grind to a halt through fingerpointing, users feel.

Steve Tiller of Del Monte Corp. explained at a session here that sometimes operations can completely stop while the vendors argue who is at fault.

In the no-fault clause, users would add to the standard contract a section stating if a vendor claims the problem lies in another vendor's equipment, his analysis will be accepted.

But if after evaluation, the problem is really found in the original vendor's equipment, that vendor must pay the user the costs to find and correct the fault.

While some users were apprehensive that any vendor would sign such a clause, other users told of installations where the "no-fault" agreement had been signed and had been implemented to the user's benefit.

Windy City Next Stop

KANSAS CITY, Mo. – The 2,000 attendees at the Caravan here bring the total for eight cities to 23,000.

The Caravan goes to Chicago next, April 17-19.

Scanning Saves

TWA System Allows Continuous Processing

KANSAS CITY, Mo. – Although Jack Kennedy of Trans World Airlines here cited impressive savings from the use of optical scanning over keypunch operations, his data preparation operation is beginning to convert entirely to key-to-disk equipment.

The purchase of a Recognition Equipment Inc. scanner on which TWA signed a five-year lease in 1967 has saved the firm about $160,000/yr every year since the 1968 purchase date and about $260,000 this year with the expiration of the lease agreement, he told a Caravan/73 session.

In addition, he estimated that if his shop were strictly keypunch, he would need about 55 additional operators, which would amount to an additional $350,000/yr.

High volume and suitable applications are needed for scanning, he stressed. With the variety of documents involving passenger travel and freight shipments originating around the world his center employs about 136 typists on specially equipped IBM Selectric typewriters equipped with OCR fonts.

Proofreaders check about 85% of the documents typed, he added. These documents are then processed by the scanner. Other applications are handled by Univac buffered keypunches.

The system is set up to continuously process the documents, with edit checks and exception reports handled down the line by the computer center.

Quality control of input documents is a critical factor, he noted, adding that such factors as humidity can affect throughput rate for the reader, which is installed in the computer room.

Document reject rate, he said, can be extremely expensive. He found a reject rate of over 1% would eat up the savings.

The cost per station now, with $20/mo rental on typewriters, comes to close to $140/mo, as there is a $3,500/mo maintenance charge for the scanner, along with supply expenses and scanner operator salaries.

The key-to-disk units will offer table lookup and reformatting as well as editing capabilities. While TWA will initially make "discriminatory use" of editing, Kennedy ultimately hopes to eliminate the verification function.

Study to Probe the Evil Computer

CW Washington Bureau

WASHINGTON, D.C. – With the aid of a grant from the National Science Foundation, the Stanford Research Institute will conduct a study on how computers are – or could be – put to socially wrongful use.

The five-month, $21,000 study under the direction of Donn B. Parker will consider just who are the perpetrators of such crimes, their motives, opportunities and methods; the attitudes of prosecutors and investigators; and whether present laws and procedures are adequate for dealing with such acts.

In conducting the program, the investigators are to complete a coded inventory of more than 100 cases and catalog the research already documented in the study of such crimes.

The cases to be studied include ones in which computer programs were stolen for resale; embezzlements in the range from petty crime to well over $1 million; vandalism of machinery and software; political or ideological sabotage of computer systems; and selling computer time and pocketing the proceeds rightfully on the part of the proprietor, NSF said.

Autoflow Successor Includes Two Options

(Continued from Page 1)

port quick updating of narrative descriptions of DP operations, ETC can in fact be used for any documentation, letter writing or cataloging functions, an ADR spokesman noted.

Common Denominator

To extend the utility of Autoflow in another direction, CPA can extract information common to any number of input programs, rather than analyze a single program as an independent unit.

In effect, ADR explained, CPA is a systems-oriented tool, since it can examine many programs in the context of their functional interaction.

Program and system maintenance, for example, is simplified under CPA since it allows the user to find all occurrences of and references to a specific data name, or to a series of names which may or may not be synonyms.

The new option also helps the user determine if and how a particular data item is altered, to ascertain the impact of a proposed change in the item.

There are 10 general types of information that can be requested from CPA including name, general syntax and file activities, as well as file organization. The option also allows searches for common Cobol language statement usages – such as STOP literal – that are critical in conversion efforts.

Area searches, allowing the printing or counting of references to specific data areas defined by location within the analyzed modules, will be possible, ADR said, with an enhancement that should be available the end of the second quarter of this year.

Other CPA features enable users to link the new options facilities with those of ADR's Librarian system for source program maintenance.

Growth of the Autoflow system had been evolutionary up until the introduction of CPA and ETC. The Autoflow logic – which won the first patent awarded a software program – was primarily a flowcharter for IBM 360 Assembler language programs.

Since then, it has been extended to handle more than 20 input languages and to run on five different second- and third-generation computers. Often used to document the logic of completed programs, Autoflow later gained a Chart facility that permitted charts to be developed from precoding statements of what should be done.

Automatic Distribution

Autoflow II will be distributed automatically to current users of Autoflow. New users may acquire the rights to Autoflow II on a permanent license for $3,630.

The processors required to work with particular input languages are separate and additional cost items: Cobol, $2,750; BAL, $990; Fortran, $2,310; and PL/I, $3,300.

The CPA option is available for $2,750 and the ETC feature can be acquired for $1,980.

ADR is at Route 206 Center, 08540.

DP Seen Aiding Creation of Bogus Insurance

By Marvin Smalheiser
CW West Coast Bureau

LOS ANGELES – Rigged computers apparently were used to create more than $2 billion in phony insurance policies for Equity Funding Life Insurance Co., a firm now involved in a wide-ranging life insurance scandal.

Investigators for the California Department of Insurance have claimed that the company had only $1.2 billion of actual insurance in force out of a total of more than $3.2 billion.

This would provide a direct infusion of cash without payment of commissions or other fees.

The investigation of the company, which is still underway, appears to have disclosed that the company computers were tampered with by certain company officials so that all phony insurance business would have a special computer "key" known only to them.

Only Good News

The officials always knew the exact status of their business, the investigators said, but when an outside auditor attempted to check up on policies, the computer would feed information only on the good insurance.

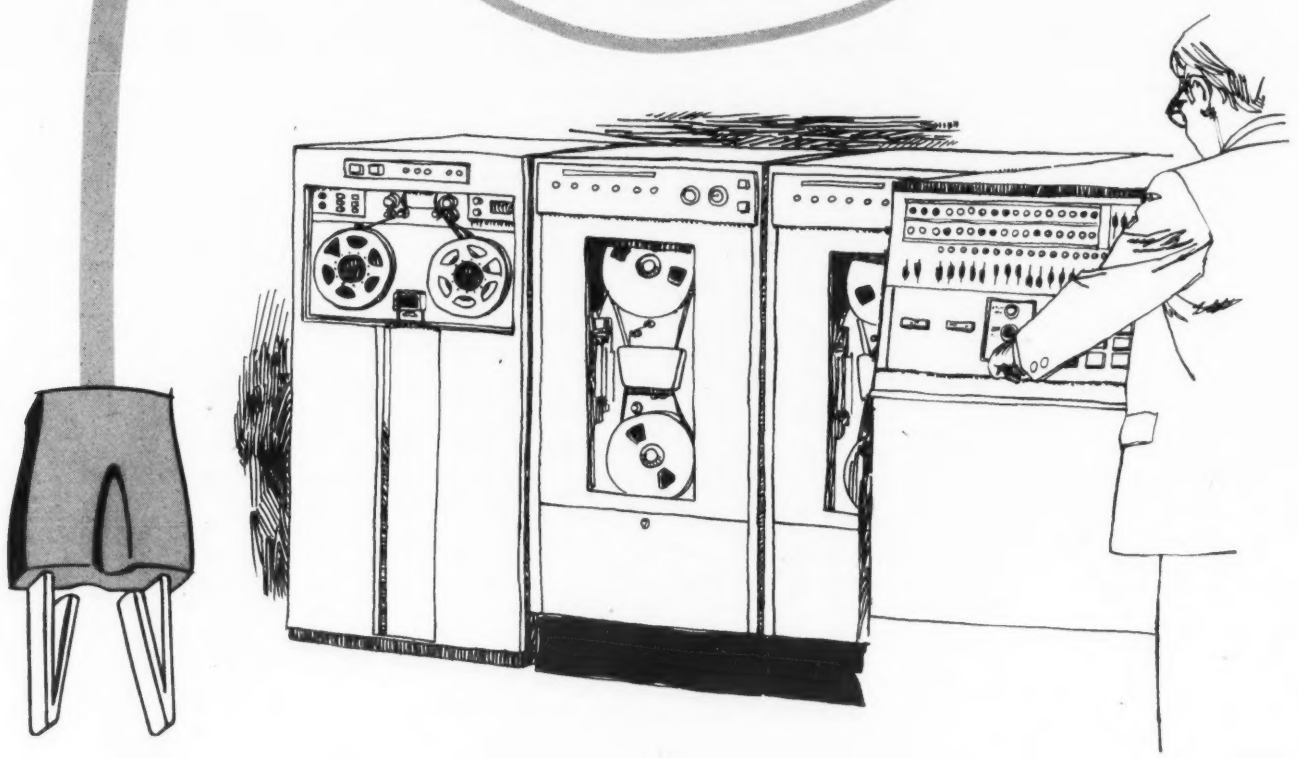
The phony insurance was reportedly created so it could be resold to other insurance companies at 180% of the first year's premium.

Most of the bogus insurance was permitted to lapse after the initial year, but Equity Funding still had to pay the second year's premiums, according to its agreement with other companies.

Because of this, a vicious circle was created, requiring the creation of additional bogus policies to pay the second year's premiums, the investigators said.

Many things we lease are even electric...

(LIKE COMPUTERS)



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CHECK YOUR WALLET AND YOUR WATCH

GOULD

Independent Peripherals, OS

Airline Switches and Saves $350,000/Yr

By Marvin Smalheiser
CW West Coast Bureau

LOS ANGELES – Western Airlines is staying aloft and saving $350,000/yr with the help of two fully booked IBM 360/65s equipped with independent switchable peripherals.

The 360/65s operate with both on-line and off-line programs ranging from reservations, trip profit and loss, plane balancing and customer development to a direct reference system advising on weather, hotels and skiing conditions.

The system's costs are kept low with switching devices linking peripherals to both mainframes and key-to-disk and key-to-tape devices, which have all but eliminated the keypunch.

By converting the off-line 360/65 to OS last year, it was possible to get rid of a 360/30 and a Model 20.

The main reservations system data base is contained on IBM 2314 disks. But the overall Western system also includes 12 Telex tape drives and eight Telex disk drives plus sizable core from Fabri-Tek on both mainframes.

Other non-IBM hardware includes 12 Computer Machinery

One of the Two 360/65s in the Western Operation With Tape Drives

key-to-disk units.

While the independent peripherals have produced Western's $350,000 yearly savings, stress on standards has played a significant part in making the overall operation efficient, according to Eugene D. Olson, vice-president of data processing and systems.

And although it had letters of intent for two 370/158s, Western does not plan to move up soon because of the good economics of its current equipment.

Installed in October 1968, the reservations system is the heart of Western's computer operations since the information it accumulates fuels many other programs.

Keeping track of 12 million seats available for sale annually, the system handles 60,000 to 70,000 message/day on peak days, according to Olson.

The reservations system is fully duplexed to every major Western office except Hawaii. There are three 2,400 bit/sec lines to points such as San Francisco, Portland, Seattle, Denver, Salt Lake City and Minneapolis and if any one line fails, all the terminals from that one line can be switched to the other two and still operate normally.

The reservations network consists of 550 CRT terminals and about 200 IBM 1977 teletypewriter terminals.

The network is activated as reservations agents respond to customer telephone calls and query the system on flights and seat availability.

A direct reference system gives reservations agents instant access to data about weather, hotels, skiing, bulletins, fares, tariff regulations and meal information. There are even maps of some resort areas.

Other Applications On-Line

A system to balance weight and manage fuel to achieve optimum fuel loads and flap settings is also employed. The fuel management is important both to avoid fuel burnoff and to purchase fuel at those stops where it is least expensive, Olson said.

A cargo control system captures statistics at ramps so they

Reservations clerks take calls from customers and check flight availability through on-line CRTs.

can be made available to downline stations.

"Every time a flight takes off, the next city it is to stop at is sent a message giving complete status of the cargo . . . the way it's to be off-loaded and on-loaded, fuel, etc. so they know how much space there is for cargo," Olson explained.

But the on-line system also yields important marketing information from the reservations data bank, Olson said, enabling Western to analyze the telephone prefix number distribution and keep track of where the bulk of its business is coming from.

Exception reports are produced on persons who fly often on Western so contacts can be made to encourage them to continue.

Mini New Member

A new addition to the on-line system and one that will be expanded this year is a 24K byte Four-Phase minicomputer installed recently in Honolulu.

It is a self-contained processor with a 2.5M byte disk system and CRT displays that show cabin layouts and seat charts for passenger check-ins.

Additional minis will be installed at Los Angeles, San Francisco, Seattle and Minneapolis by May 1, and plans call for tying them into the reservation system later this year.

Everything in this on-line system is physically switchable to the backup 360/65, used primarily for off-line commercial and business data processing, including basic financial and accounting functions for the company and its 10,000 employees.

A trip profit and loss system analyzes the profitability of each of the flights, pulling together all costs and relating them to route segments.

An aircraft maintenance system schedules maintenance and overhaul. "We have to keep track of each component part," said Olson. "Each component has to be removed at a certain time."

A runway analysis program gives the pilot information about flap and power settings for takeoff and landings under various conditions at various airfields.

A flight operations program schedules crews optimally, reducing crew time spent away from home.

The non-peak hours are used for such support activities capturing the whole system onto tape two to three times a week in case of catastrophic failure.

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DUCS-VI will be available during the 3rd quarter of 1973. Version 6 will support both local and remote IBM 3270 Display Systems providing users with a convenient means of utilizing the enhancements of the IBM 3270 System.

Requests for DUCS-V should be submitted to C F S. License agreements, DUCS-V abstracts and other details will be sent by return mail. Inquiries may be directed to Mr. Richard K. Goran.

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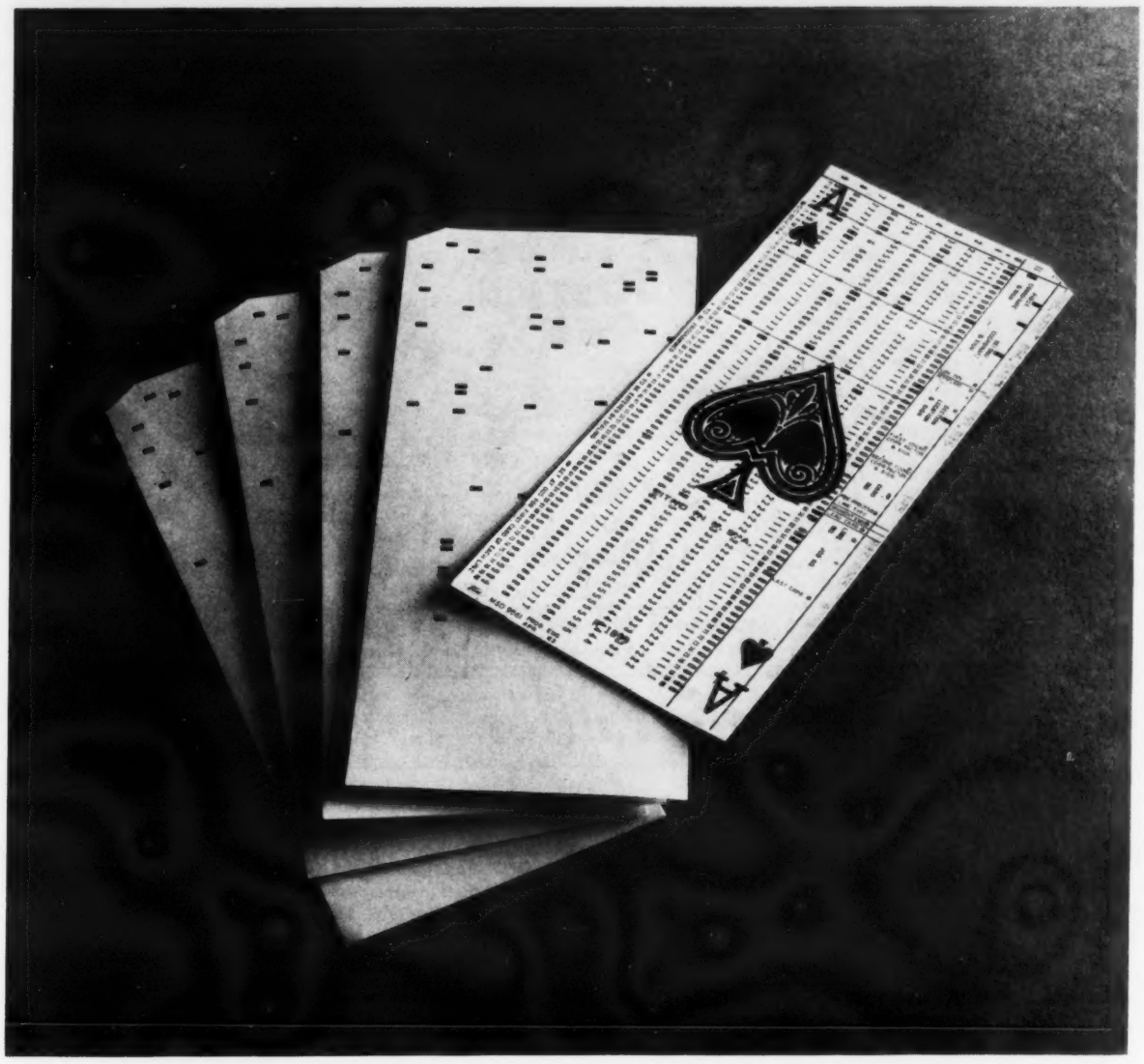

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Human Error Found Cause of Overpayment In Weekly Paycheck

By Bob Wright
Of the CW Staff

DURHAM, N.C. – An overpayment of over $1,100 in the weekly paycheck of a city sanitation worker has been blamed by officials on "human error," either in keypunch verification or original coding information.

According to Keith Brooks, the finance department's manager of data processing, the unidentified city employee had been authorized a pay raise to $3.12/hr, but received a raise to $31/hr. The overpayment, now corrected, lasted from November to the beginning of this year. The employee involved failed to report the error.

Brooks said the mistake originated from either an improper keypunch verification or an error in the information on the original raw-data coding form, such as a mark-sense time card.

"We feel like it was an error in keypunch, but we do not hold our cards and cannot verify this. We had to assume that the coding form was filled out wrong and punched. All we know is that it got into the machine and the machine did not kick it out," Brooks said.

Not designed to detect such an error at the time, the Burroughs 2500 system has since incorporated coding to prevent writing a weekly check over $300.

A First

To his knowledge, Brooks said, this was the first time in his eight years with the city that such a mistake had been printed out without someone noticing it immediately.

Because the city employs daily and part-time workers, such as recreation people who are paid $30/day, the system is not designed to proof an hourly rate. The biweekly payrolls are balanced to a gross figure, while the weekly payrolls are balanced to total number of hours.

Manual controls outside of data processing and within the finance department are responsible for computer input.

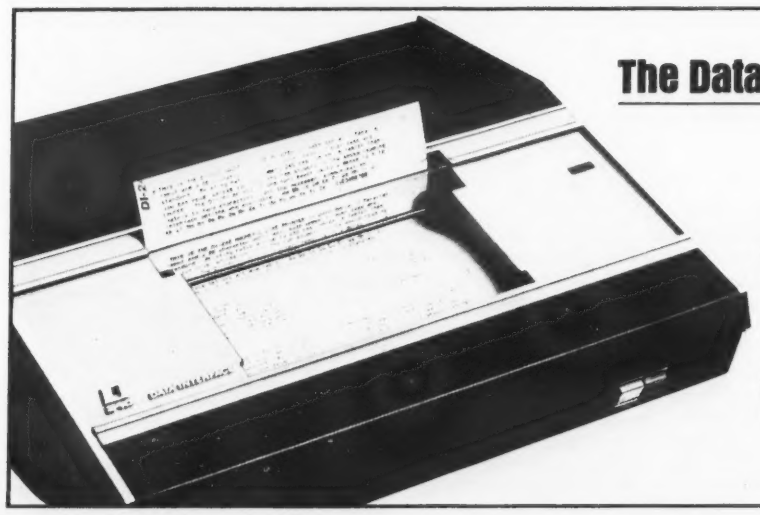
Since the error, according to Brooks, these controls have been tightened with the adoption of a check-list report where the payroll division head initials all names and their corresponding amounts.

In addition to the more stringent manual checking, the system now has personnel information included to further check an employee's pay amount.

Such pay-range, pay-step and class-code information still does not eliminate the possibility of payroll error with workers outside the regular payroll system. The manual, check-list report, however, is designed to cover these accounts.

Durham's annual audit or year-end closeouts caught the overpayment error.

After the yearly audit was made, further analysis isolated the time when the city employee received his last payroll and also the period of overpayment. Payment on the last check was stopped and Durham got its money back.



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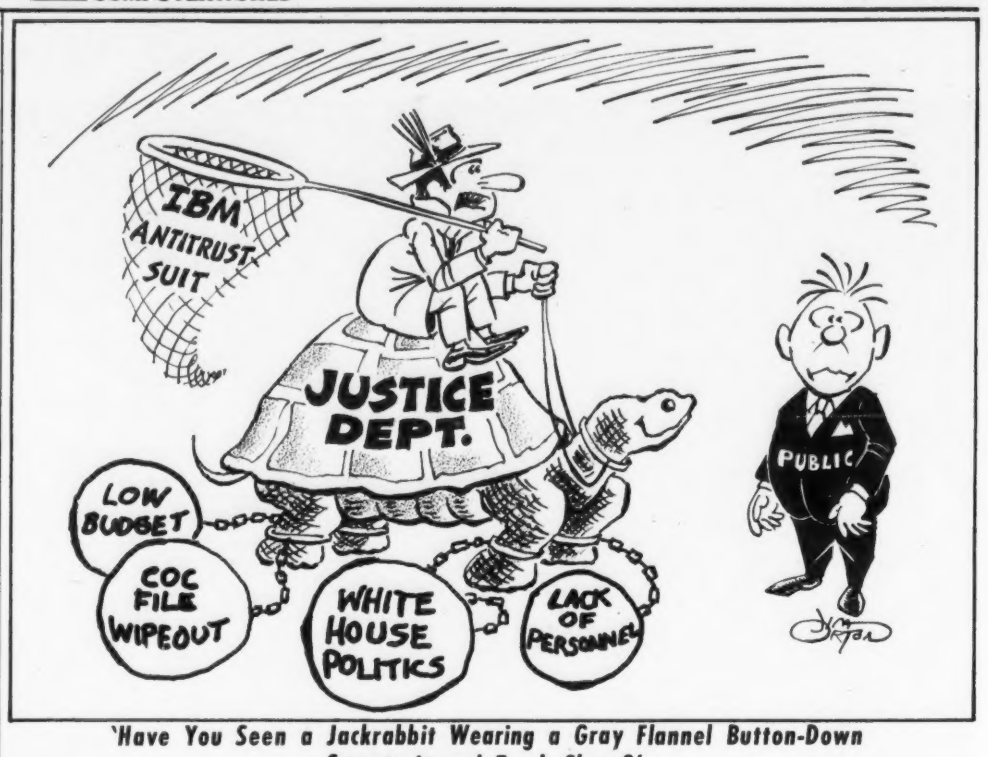
Editorial

Spirit of Cooperation

The news from the latest meeting of the Computer Foundation Organizing Committee is a solid vindication of the spirit of the Certification and Testing Advisory Committee's recommendation to the Data Processing Management Association last year. In Chicago the responsible leaders of nine societies showed that when professional matters are at stake, they can, and will, work together.

Equally encouraging is that they clearly understand the price to be paid by the individual societies for such cooperation. The leaders did not put aside any subject. The problems of the credibility of the CDP examination, the problems of finance, the problems of the Registered Business Programmer Examination, these and many other problems were aired openly and honestly.

If the future members of the Computer Foundation remember the spirit shown by the members of the organizing committee in 1973, then the future of the Foundation is assured.



'Have You Seen a Jackrabbit Wearing a Gray Flannel Button-Down Sweatsuit and Track Shoes?'

Letters to the Editor

Link Training To Career Development

In reference to the article on "Users Differ on How to Pick, Train Staff" [CW, March 7], I would like to add that the key to successful personnel development is to link training to career development.

By doing this, training is taken out of isolation and tied to the needs of the job levels and the individuals filling these jobs. The first step in accomplishing this is to think of training as "manpower development."

To be effective, the manpower development activity must work with current and meaningful job descriptions and career paths that are supported by the organization.

The EDP training must be linked to the job levels, so that as one moves up through the organization, the training requirements for the level are defined.

Further, a definite EDP training plan for each staff member should be developed. Based on the results of a skills assessment, a training plan for each staff member can be built that is linked to a job level and tentative career path. Not until this is done, is it possible to develop a budget based on specific needs.

The cost of unstructured training in terms of time away from the job and course costs is too high to allow it to be uncontrolled.

EDP personnel should be encouraged and motivated to think in terms of long-term careers within their company. A well-planned and organized manpower development program is a contributing factor in accomplishing this.

Edwin F. Kerr
Executive Vice-President
Q.E.D. Information Sciences, Inc.
Wellesley Hills, Mass.

In Defense of RPG: More Productivity

The comments by Marvin S. Ruth in the March 28 issue that RPG II is for the unsophisticated, but a he-man wants his Cobol, smacks of the attitudes of programmers in the early 1960's who felt the only way to get into bed with a computer was good old assembly language and Cobol was for sissies.

If RPG II does not support a particular environment, then let's make it. There was a time when there were numerous applications that had to be written in assembly language because of the lack of I/O support in Cobol. We are on at least our sixth version of Cobol and fifth of Fortran; RPG is only up to number two.

Our company includes a service bureau in which all but two of the 400 programs are written in RPG. It is true that on occasions we had to think a little harder to find a solution within the confines of RPG, but the solution was there.

Our defense of RPG is that (1) programmers are at least twice as productive in RPG as in Cobol; (2) virtually any commercial application can be written in RPG – we would not hire a systems analyst who was not capable of satifying this claim; (3) RPG is a more machine-independent language than Cobol; and (4) there is little evidence of performance degradation due to possible inefficiences of the compiler.

Gary Mokotoff
President
Data Usage Corp.
Fort Lee, N.J.

'No Need to Defend'

It is shocking when a systems analyst cannot discuss the merits, weakness and limitations of a computer language without making a blanket accusation that "advocates are small thinkers with limited ability."

The letter which followed Marvin S. Ruth's letter in the same issue makes it unnecessary to again discuss or defend RPG II to Ruth.

As manager of a corporate DP installation, I have consciously decided to continue the use of RPG II based on present and immediate future needs of the company. Computers and languages are only tools used to provide the product (service) required by management.

The use of phrases such as "die-hard Cobol man, onto bigger and better things, reality hit, Mickey Mouse language, green-hat accountants, ask IBM, big brother, awaken the Romans, modern-day analysts, state of the art growth companies," etc. indicates Ruth's thinking may be more closely aligned with vendor marketing strategy than the management by which he is employed.

If his company is contemplating an upgrade to 370 DOS/VS with CICS, which dictates a conversion to his favorite language (Cobol), why is he concerned about places to send a resume?

George E. Fitzgerald
Newburyport, Mass.

'No Ideal Language'

I have been reading with interest the pros and cons of RPG II as "the" programming language. Certainly any knowledgeable DP professional should know that no one programming language is ideal for all situations.

The recent emergence of the parameter-driven load and go inquiry and reporting systems seems to have been overlooked by most DP installations as programming tools to complement any programming language.

These systems are powerful, efficient and easy to use and can reduce programming turnaround time and overhead to a minimum.

Stuart Kerievsky
Vice-President
Sigma Data Computing Corp.
New York, N.Y.

'Sophisticated'

Anything that is easy may be made hard with little effort. Reading the letter on "Beware of RPG II Perils," I found in a few short paragraphs many of the basic problems which haunt our profession.

When the gentleman refers to those who make RPG II work as more gifted than himself and follows this statement with his long reentrant experience using 360 BAL as support for his unspoken boast, I am left unimpressed.

A one-language programmer is somewhat like a prize fighter with one arm. What should the board do? Wait until they hire a DP manager, then order the hardware that he is experienced with?

Could this service bureau justify, on a cost-effective basis, a 360/40 so the DP staff may use their favorite language? I also wonder if seasoned programmers are not a little like seasoned oak and just a bit hard to change.

I have found that IBM SEs are not only qualified but anxious to give instruction, assistance and advice on the use of all their program products.

My advice to potential employers is: beware of DP personnel who blame inefficient performance, inaccurate results and excessive development time on hardware or software.

RPG II is a sophisticated language and demands sophisticated, open-minded, flexible programmers if its total performance is to be achieved. As a matter of fact, this is the best language you could use on the System/3 Model 10.

R.S. Buzzard
Mexico, Mo.

Manuals Incomplete

Regarding a letter written in the March 14 issue, under the headline "Beware RPG II Perils – Nothing Hard Is Easy." I read this with more amusement than the writer attained from trying to program in RPG.

I currently have an IBM 360/22 installation. Ninety five percent of our programs are written in RPG. We have had great success and little, if any, problems in utilizing RPG. We do a great deal more than "just printing reports." We have a full order entry system in use with tie-ins to a daily allocation and product status listing tied in also to accounts receivable, sales, billing, inventory, etc.

We have complete histories (customer and product), accounts payable, payroll, general ledger and various other applications – all of which run efficiently, quickly, problem-free and are all programmed in RPG.

The language is far from inadequate. It is the easiest to program, debug, maintain, and is extremely efficient in core utilization. We have 32K on our system and have a library of over 400 active programs written in RPG. These programs, plus numerous others which are no longer in operation, were programmed by my programmer and myself.

I feel there are two basic problems for those individuals who try to program in RPG. First, the manuals supplied by IBM, regarding RPG, are incomplete in their explanation of the language. The reason for this is that Cobol was the universal language and all support was geared toward that language and very little toward RPG.

The second problem is the lack of competent RPG programmers available to use this language efficiently. Of course, the second problem relates in part to the first.

William Scara
Director of DP
Cosmetically Yours, Inc.
Hastings-on-Hudson, N.Y.

Stop Status Buying

Sometimes it is a pleasure to read Letters to the Editor and sometimes it is agony.

A quote from a letter – "RPG and RPG II advocates are small thinkers with limited ability . . ."

Now, that is agony!

Users of RPG do so because of their specific requirements: hardware cost, personnel capability and availability and the boss's wallet. Users of Cobol, ALC, PL/I, etc. do so for the same reasons.

Some people think they must buy a Cadillac when a Ford can perform the same function.

It is about time that size and complexity is junked as criteria for evaluating a computer installation and time for status buying to stop!

George F. Leavy
Long Branch, N.J.

(Other letters and viewpoints on Pages 11-14)

Information Processor, Data Processor Different Breeds, but We Need Standards

The Taylor Report
By
Alan Taylor, CDP

A few days ago I was at a Washington, D.C., meeting of the Ansi X3 Sparc Committee chaired by T.B. Steel. The committee is responsible for noting the need for new standards in the field of information processing systems.

During the morning Steel was called out of the room, just as I was discussing a proposed certification system for DP documents and operational applications. When he came back Steel was steaming. It turned out he had just heard that Educational Testing Service in New Jersey, had been sending out the College Board scores for his daughter to some 30 colleges across the country. At least that is what the colleges had thought they had been receiving from Princeton.

According to Steel, the scores being sent out were not his daughter's. He had heard that a mistake had been made in the data maintenance systems used to create the letters for the various colleges – and that the scores being distributed were not his daughter's. ETS would need a good lawyer, he said.

Yet, of all the people in the country Steel is one who should have been most understanding of the problem. He has figured in deciding waht standards are needed and what standards are not needed in information processing – both in his X3 capacities and also as a Share representative. *I have never seen a suggestion from him, or from the whole standards or academic operation, that mistakes like this one should be systematically avoided!* So why should he blame ETS?

And yet the mistakes can be avoided, but only if we professionals train ourselves to avoid them – by training ourselves in what data processing is, and what information processing is – and recognizing the differences. For there are major differences.

Data processing is what used to be performed on keypunches and tabulators. Information processing only became possible on any scale with the growth of the computers. But neither our educators, nor our standards bodies have even started to appreciate the differences between them, nor to prepare the profession to handle the items that are correct in data processing, but incorrect in information processing.

Obsolete Training

One of my greatest objections to information processor training, as I see it practiced, is that it is in many ways still training people as they were trained for keypunch systems. Then the task was to take a set of numbers, with a few labels attached, and make them into various summaries or reports.

The training concerned flowcharting the report creation process, understanding how someone would want the report formatted, organizing a system so the necessary decks were created, preserved and organized – all very similar to data processing training today.

Unfortunately, no one seems to have noticed that the subject matter being processed now is often very different from the subject matter that could be handled by tabulating machines. We still do handle the work that was once on the tabulating equipment. It is indeed a major part of our workload, and will probably continue so for some years.

But now we are handling some much more vital work – dealing with real things, a man's capabilities, a reactor's safety limits and a corporation's opinions and claims. We have passed the limits of 80-column tabulators, and now deal with the information carried along with the figures, and not just the figures themselves.

The problem with information is that it is much more than simple data. The figure or symbol "2" denotes the whole nature of the concept "two." The use of the figure means a calculation can be safely undertaken because the nature of the concept is understood by all as the same thing. It was the same for Newton and Babbage as it was for the programmers of Stonehenge II.

Information includes, however, items as well as numbers. In data processing we call items by the names that we give them.

A named item is intrinsically deciding what standards are needcause names can be inaccurate, while numbers can't. Information processing is intrinsically different from punched-card accounting. Information processing involves understanding the nature of the items being processed, as well as the nature of the mathematical attributes of their data.

Unfortunately, little or nothing of this is taught in information processing schools. These teach the method of processing, but not the nature of processing, even less do they teach the nature of data processing systems, and the dangers involved when the names are confused with truth or reality and are simply hidden.

The Dunning Letter

For instance, it seems to be quite reasonable to send out nasty letters to a person whose record includes an "overdue" flag. Any data processor can do that – and many punched card systems did, and still do that.

An information processor, by contrast, could look in the system and determine whether the flag was recently updated, whether the system is such that all people not known to have credit are debtors – or whether the name is such that a credit could easily be misapplied by the corporation rather than by the person outside.

For instance, in the case of Robert D'Unger, [CW, Letters to the Editor, March 21] an *information processing* system would look to see whether a credit existed for Dunger, Unger and other likely versions of the name before sending out a dunning letter. A punched card system could not do this, of course – but then punched cards are not information processors.

Obedience or Accuracy

The difference in the two concepts – data processing and information processing – and the two occupations concerned can be neatly defined as the difference between doing what one is told to do in general, and doing it carefully, watching to see that the result is correct.

The data processor's highest claim is that he is obedient – the information processor's goal is that his results will be correct in the outside world.

Or, to be precise, the data processor is a skilled tradesman following orders. The information processor is a professional who uses his skills and authority to carry out a difficult job well.

IP Is Difficult

The information processor's job is difficult. A debtor is someone who is not definitely known to be in credit – although he may in fact be in credit.

There are many other traps to catch someone unwary in understanding the reality behind the data. The information processor must know them all.

(There are a few simple cases where the data says one thing – but the reality may be different – and where all the information content that is necessary is actually there. For example, in the box alongside see how you can test yourself on information processing.)

IP Is Responsible

The responsibility of information processors is far, far greater than the responsibility of data processors. Data processors answer only to the owners of the data. Information processors must also answer to Steel's daughter, or the college opportunities she may have missed, and to Robert D'Unger, for the accounts that have been messed up, and to the society for the way we in the DP community have failed to measure up to the need.

Yet, even so, information processors have nothing to be ashamed of.

Watch Abuses

They are now finding their professional responsibilities in exactly the same way that the doctors and the CPAs found theirs – by watching the abuses coming from current standards of responsibility.

Now the task is to provide understanding of those abuses – so that those who wish can become professional information processors, while those who do not care to will be able to be seen as charlatans, to be driven out of the professional practice of information processing.

That time is not yet here – not quite. Now is the time for education, standards and leadership.

Hopefully, X3 and Sparc will give leadership more willingly in the future, now that they have had a taste of the problems themselves.

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A Test on Information Processing

1. A question on a reference asks, "Is the applicant a good worker to your knowledge?" Mr. Jones' reference says, "He is always the first in the office." Miss Brown's says, "She is always hard at work whenever I look through my door." Mr. Smith's says, "His production quality is excellent." **What data content is there? What information content is there in addition to the data?**
2. A report to a senior officer about a company product says, "The frequency of sales of our computers is related to:
   (a) The sophistication of the customer.
   (b) The reliability (up-time) of the hardware and software."
   What data content is there? How many versions of information can you find in addition to the data? How would you determine which was which?
3. A complaint about possible leakage of secret information is answered by the statement, "I have examined the secret information and the suggested leak. None of the items in the 'leak' document is identical with the ones in the secret information."
   What data content is there? What information content is there? How, and why, do they differ?

Letters to the Editor

Ads Discriminatory?

The type of unequal opportunity practiced by one of *Computerworld's* advertisers, Applied Data Research, Inc., is blatantly illegal. An ad in the March 21 issue announces positions for "Customer Service Representative, Female or Male" and "Computer Software Salesman." Apparently women at ADR are equal enough for lower-paid jobs but not for the higher-paid sales positions.

This is not only discriminatory, insulting and psychologically damaging to women readers, but also against the law.

The position should read, "Computer Software Sales Representative, Female or Male."

Anita Murray
Manager
Systems and Data Processing
Bunge Corp.
New York, N.Y.

...And a Reply

In our opinion the term "salesman" is a generic one and to date has never discouraged women from applying for the position.

Ironically, our problem has been that we cannot get "women" to apply for the customer service position, and inserting "female only" would be "discriminatory" toward the males.

The customer service representatives in our company, of whom the majority are women, represent the technical part of a sales-support team which commands respect and recognition equal to our salesmen and they are compensated based on performance just as our salesmen are.

Furthermore, ADR can never be accused of not providing equal employment for women. Women throughout ADR hold positions of responsibility and authority in various capacities from the programmer level on up to our corporate attorney.

Ms. B.J. Hahlbeck
Manager, Field Administration Services
Applied Data Research, Inc.
Los Angeles, Calif.

Programmer Not Guilty

As a former applications programmer, I have to stand up and shout when someone blames programmers for existing problems.

I am assuming that Robert D'Unger's problem does not center around an alpha name list, but rather his name as it appears on computer-printed mailings (bills, invoices, checks, etc.)

In all the systems I have worked with (either purchased or written in-house) I have never seen one that edited the name field for special characters. There are some exceptions.

One is the removing of selected special characters from print lines in an effort to speed up printing. This is done only because these characters do not exist on the print chain and therefore print as blanks anyway.

Also, some systems such as those that emboss plastic cards cannot have special characters due to the limitations of the embossing equipment. There may also be others that I am not aware of.

Nowhere other than under the conditions already stated have I ever heard of anyone programming to eliminate special characters from name fields or writing special routines to accept special characters in the name field.

Granted, in Cobol the possibility of eliminating special characters by improper definition of the field does exist.

I would assume, though, that this is not a conscious effort on the programmer's part.

As a general rule with systems I have seen, it is up to the individual who prepared the input source document to check all printed output for errors when adding new accounts or changing existing ones.

Working with these observations I fail to see how anyone can blame programmers for this problem.

I would be more inclined to agree with H.R. Sides' explanation of the problem and say Gigo, or John B. Beall's explanation concerning the print chain [CW, April 4].

M.A. Stark
Systems Programmer
Grand Rapids, Mich.

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Letters to the Editor

(The following letters are in response to a March 21 editorial in Computerworld on the inability of a computer to spell Robert D'Unger's name correctly. A second editorial on the problem appeared in the April 4 issue along with other reader comments.)

Sorting Problem 'Easy to Solve'

The editorial statement that apostrophes do not belong in English names is the type of statement that drives everyone except computer types right up the wall.

Whether apostrophes belong in English names is irrelevant. Apostrophes do exist in the names of people. Computer programmers do not have the right to determine how names are spelled. They must make accommodations for existing spelling.

As you state, the problem is in sorting, or more generally in comparison of alphanumeric character strings. However, the problem is "easy" to solve in English and probably in other languages.

Standard transliteration rules are available for transliterating between alphabets.

However, sequencing does not have to follow the rules of the English alphabet which has no standard position for such characters as the apostrophe.

The "trick" is to record two name fields, one to be used for display when character sets are limited and one to be used for sequencing. Standard rules should then be developed for building the key field from the name.

Cobol programmers should not be leery of apostrophes. Alphanumeric literals are bounded by quotation marks, not apostrophes. The character string " ' " is not the same as the figurative constant QUOTE.

W.M. Compton
Sr. EDP Research & Development Analyst
Dhahran, Saudi Arabia

This is a Matter For Standardization

. . .The only sorting difficulty would be in the use of IBM card sorters, which should no longer be major sorting tools.

The present spellings of his name "D Unger," "Dunger," and the like, are probably due to much-needed but ill-designed edit checks accepting only alphabetics in name fields.

The designers of the checks should be told that last names can contain embedded blanks (yes, Virginia, there is a blank character), hyphens and periods; and data processing systems should be able to store a person's name exactly as he wishes it to appear.

Indeed, is it not a major advantage of computer systems that data such as names can be stored once, and not fall victim to transcription errors?

Because of the existence of names like D'Unger's, the "Mc . . ." family and the Vons, there is a valid question whether the prefix should be treated as part of the last name (I would look for D'Unger under D, McTaggart under M, but Ludwig von Beethoven under B). But this is a matter for standardization, not jokes.

Edward G. Nilges
Programmer/Analyst
Computer Center
Roosevelt University
Chicago, Ill.

Man Not Subservient

. . . You are telling D'Unger that man is subservient to computers. I strongly disagree!

I work very hard at convincing my students that "man is the master and computer is the slave." The March 21 editorial leaves the impression that "the computer" is something we all are going to have to "channel [our] efforts into living with" rather than being a technological advance which is freeing man to do what no other creature on earth can do – think.

A man's name is one of his most precious possessions: he has it from birth until death. I don't think D'Unger is complaining about where his name is listed alphabetically – all he's asking is that *his* name be used.

That isn't asking for very much. Man invented Cobol, why can't man change it?

David M. Dayton
Associate Professor
Grove City College
Grove City, Pa.

DPers 'Nonresponsive'

The editorial in the March 21 issue was an excellent illustration of the nonresponsive attitude so frequently displayed by the so-called data processing "professional."

It is precisely such a lack of responsiveness that has resulted in so many frustrations on the part of credit customers attempting to rectify billing errors and receiving no response other than computer-generated letters threatening all sorts of dire consequences for failure to pay outstanding balances (how many millions of dunning letters have been sent as a result of a negative zero balance?).

Your signature, "A poor English-speaking computer," was totally appropriate. How about getting a human being into the act?

Harry W. Clement
Supervising Data Processing Systems Analyst
Department of Finance
State of California Government
Sacramento, Calif.

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Lack of Communication, Coordination Can Lead a Project to Certain Failure

By Miles Benson
Special to Computerworld

Some people build computer software by assembling a huge team of programmers and letting management herd the project to completion.

Other choose a small group of particularly skilled people, point them in the right direction and let their professionalism and responsibility carry the project through.

The first method presents enormous communication and coordination problems.

Viewpoint

Surprisingly, so does the second.

This is the story of three highly skilled programmers who nearly put together a flexible, versatile time-sharing system. Nearly – but not quite.

To begin, let's give the programmers disguised names. There is O.S., the operating system specialist; L.P., the language processor specialist; and I.F., the interface specialist.

And let's also give the players a disguised environment. They are members of the staff of the computer center at New England Tech (NET).

NET operates its computer center with the second philosophy described above. The employees are hand-picked, because of their strength as highly motivated individual contributors.

Division of Labor

When the research grant came through from Marketronics to build a specialized T/S system for its 4000 line of computers, it was a natural for the NET staff.

O.S. could build the T/S operating systems, and L.P. could construct an APL interpreter to run on the system. And when the time came to hang it all together, I.F. could be called in to help build the interface.

That's the way it all got started. O.S. sat in his private office and designed the operating system. L.P. sat in his private office and designed the APL processor.

They talked from time to time about what the interface should look like. Sometimes they went to I.F.'s office and got his opinion.

Once O.S. came into L.P.'s office and told him to "slow down," that they were "getting out of phase." O.S. said L.P. was much further into *his* part of the project than O.S. was into his.

Come Again?

But L.P. took that as a joke. Would a responsible computing specialist ever seriously suggest that another delibertately slow down his work? L.P. couldn't buy it and continued to work at his own pace.

Neither specialist ever thought about bringing that short conversation to the attention of management. The possibility that they had a big problem which would need the attention of someone else never occurred to either of them.

When the APL interpreter was up and running, and the operating system was still losing interrupts and hanging up in random locations, it became clear that they were, in fact, out of phase – and in trouble.

I.F. was called in to help with the operating system, but the interface itself would now have to be deferred.

Then L.P. got reassigned. There was an accumulation of fixes to the vendor's 4000 Fortran compiler which only L.P. could take care of and APL was, for the time being, done.

Too Much of Everything

Well, the operating system just took longer than anyone had ever imagined. Even with two men working on it, there were too many bugs to be exterminated, too many lost characters on the teletype-writer lines, too many missed disk revoluations, too many memory protect violations. When O.S. finally announced he had a reliable and viable operating system, he was greeted with a dull thud.

L.P. had just given notice. His work fixing the Fortran compiler hadn't been challenging enough. And Vermont A. and M. had just received a grant to build a translator-writing system. L.P. jumped at the opportunity to join the staff.

It's hard to say just when a project is a failure. O.S.'s T/S operating system really is in great shape and the user community loves it. APL isn't running under it, though. L.P. hadn't documented his design, and when he left he was in such a hurry that he didn't fill anyone in on his work.

I.F. looked at the listing, but he never did find all the interface hooks which should have been there in order to join the operating system and APL.

Can a project be a failure because one part wasn't integrated? Can it be a failure because one part was done too fast?

It can, if communication and coordination aren't sufficient to overcome these problems.

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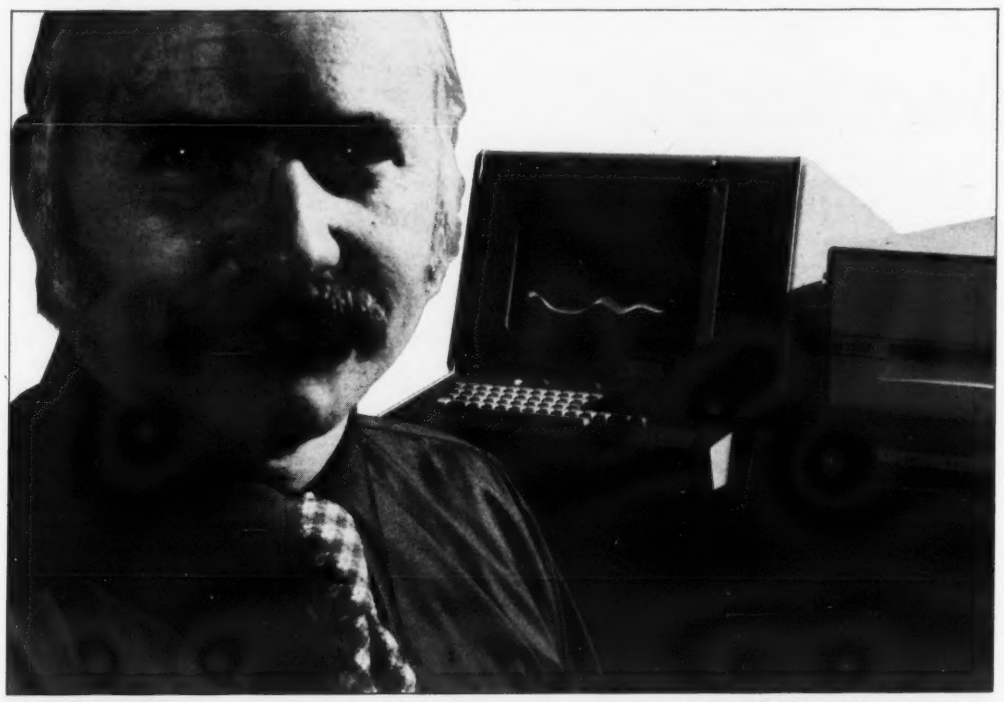

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The Professional's Viewpoint

QDP—a History of 'Exchange'

(Quality Data Processing, which has been in the news recently because of its expulsion from the Computer Foundation Organizing Committee, represents a different type of data processing society – one that has worked for 10 years without officers, membership dues or formal meetings, while making positive contributions to data processing.)

By Ron Stewart
Special to Computerworld

In early 1963, 11 ADP professionals, including myself, in the metropolitan Chicago area formed a very loosely organized group.

At first, the group was primarily from the insurance industry and was dedicated to helping each other – with advice, information, backup computer facilities and a little programming or systems design, on a moonlighting basis. Almost all the contacts between the original members were by phone.

By late 1964, the group had grown to 20 and informal meetings were being held monthly. The next step was an increased interchange of material between the participants. Operating procedures, program modules, operating system and software modifications, in-house standards, documentation techniques, organization structures and employee acquisition data were exchanged.

Creating Bylaws

By 1965 the makeup of the group had altered appreciably, although it was still primarily made up of middle management, and was nearly 50% insurance industry-oriented. Because of the increasing activity, it was decided to create some bylaws and a name for the group.

Limited bylaws were created and "Quality Data Processors" became our official name. Still, within the organization, the prime objective of QDP – to exchange information – continued unchanged.

Within this requirement several concepts apparently evolved automatically. Among these were the ideas of no official records or minutes, no membership fees or dues and no treasury. These ideas were retained.

During 1966, several members of the group became interested in three ideas which were to have a lasting effect upon the organization.

- We wanted to publicize the EDP profession.
- We started offering free advice and support to churches, schools and other organizations unable to acquire DP services.
- We noticed, and disliked, the great liberties being taken by some EDP professionals, as far as providing the business community with a *quality* product.

It was during this initial exposure to various DP trade schools (through QDP's guest lecture program) that several people in the DP education field became interested in QDP, including Robert Sennet, who was our representative at the Computer Foundation Organization Committee meeting.

After a couple of years of developing a good working relationship Sennet approached me (I was acting as spokesman for the group – there were no elections and no officers, even in those early days) about further formalization of the organization, and broadening its scope, along the lines already evolving.

As a result of his approach, in 1970 the QD Processor group became QD Processing – more or less structured as it is today. Sennet and myself were nominated cofounders of the newly evolved organization, as the entire group wanted to maintain the concepts of minimal record-keeping, no officers or elections, no membership dues or membership fees, no official meetings and no treasury. Thus the cofounders became the coordinating facility for the new organization.

This area of a coordinating facility was carried over from the old organization, with the idea of all activities being volunteer ones, and a stressing of the anonymity of membership.

No tasks were assigned – volunteers would be asked to fill any upcoming needs.

No membership lists were circulated to the membership – and needs for contact with the other members passed through the coordination facility provided by the cofounders. Equally, any requests for support or membership were also filtered through the cofounders.

In fact, certain requirements of anonymity for the individuals – and against poor quality support – were written into the QDP bylaws, as was conformance with the various no-profit laws.

Thus QDP evolved into a working, volunteer group providing ADP services to the community and with a healthy interest in professional quality.

We were properly able to offer membership to Ken Lord after both cofounders had agreed that having him as a member would forward the purposes of the group – and also to assign him the task of working on the Computer Foundation Organizing Committee subcommittees, for which he had volunteered.

If anyone else is interested, our bylaws do provide for local organizations in other parts of the country.

Ron Stewart is a cofounder of Quality Data Processing.

Letters to the Editor

PLC Responsible For Cobol's Course

James Manley in his March 28 letter has intertwined development and standardization of Cobol, Ansi and PLC. Ansi is not responsible for the development of Cobol and X3 does not direct the efforts of Codasyl.

PLC is responsible for the development of Cobol, and nobody else. Ansi (X3J4) is independent of PLC and is responsible for specifying Cobol standards. In the course of preparing standards for Cobol, Ansi thoroughly reviews the current language specifications (as published in the *Cobol Journal of Development*) and is a prime generator of proposals to PLC for modifications to these language specifications.

However, any person or organization may also submit proposals or suggestions for Cobol changes to PLC.

It is not always obvious whether to submit a suggestion to PLC or Ansi, so anyone with suggestions might just as well send them to the addresses given by Manley with the understanding that they might be forwarded to PLC for consideration if appropriate.

Fred L. Forman
Arlington, Virginia

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Random Notes

Plot Option for CUE Package Adds Graphics for Evaluation

CUPERTINO, Calif. – Boole & Babbage, Inc. has begun deliveries of a plotter option for the previously available Configuration Utilization Evaluator (CUE) software monitor package.

CUE produces tabular reports presenting average performance figures for the various components over time. The plotter option pinpoints peaks and valleys of the CUE measures as a function of time.

The option requires a plotter, the company noted from 18990 Homestead Road, 95014.

'Ramis' Gains Host Interface

PRINCETON, N.J. – Users can combine the processing capabilities of conventional programming languages and the retrieval and reporting capabilities of the Ramis file management system through a programmer interface feature recently introduced by Mathematica, Inc.

The interface allows programmers to code in Cobol, Fortran or PL/I, but use the Ramis facilities to retrieve, change or manage records stored on the data base.

Mathematica is in the Princeton Station Office Park, 08540.

'Analystic' Service Updated

WALTHAM, Mass. – Investment managers and corporate planners gain flexibility in studying significant financial and economic data, through the use of the Analystic III service now available on the Interactive Data Corp. remote-computing network.

The service allows users to work with several different data bases, including the Value Line analytical data base-1 of financial information, developed by Arnold Bernhard & Co., an economic base built by Lionel D. Edie & Co., and containing information on more than 6,000 economic variables; and Interactive's own securities price data base.

The company is based at 486 Totten Pond Road, 02154.

Package Meets Osha Needs

NEW CITY, N.Y. – OS/360 users can develop data needed to implement and monitor policies and create reports related to the Occupational Safety and Health Act (Osha), with a Health/Safety report program from Information Science, Inc. (ISI).

The package also allows the user to enforce accountability among supervisors by comparing actual illness-and-injury costs with budget estimates. The program runs in 140K bytes and costs between $25,000 and $35,000.

ISI is at 18 New Hempstead Road, 10956.

'Cytos/II' Puts 16 Users on 1130

SAGINAW, Mich. – Sixteen terminals can access an IBM 1130 simultaneously, with users working in their own choice of languages, under the Cytos/II multiprogramming operating system now available from DNA Systems, Inc.

Cytos/II resides in the foreground partition in conjunction with IBM's Distributed System Program (DSP), which normally allows an 1130 to control a System/7. As in an S/7-1130 linkup, the users' jobs are actually processed – in a time-sliced mode – in the background partition.

The DNA operating system allows users to develop, test and execute programs written in Fortran and RPG, and in the MSP/7 macro assembler for S/7 operations. In addition, the Cytos language itself provides a full set of utilities to manipulate data sets on disk.

This facility to work directly with data sets can be used to create information files for application programs, or to build and work with source programs which can be input directly to the appropriate language processor.

A full context/line editor feature of the Cytos command language is particularly useful in working with source programs, the company noted.

Throughput is increased under Cytos/II by the spooling of all peripherals.

Cytos/II has been designed to run on a 16K core 1130 with five disk drives, communications adapter, line printer and 2741 or Ascii-type terminals. Another version of the system, however, is available for Digital Scientific's Meta-4 computing systems.

Either version may be leased from DNA Systems for $290/mo, or for $5,995 on a one-time basis.

The company is at 1258 S. Washington, P.O. Box 1424, 48605.

Performance Monitors Can Steal Data

By Don Leavitt
Of the CW Staff

SAN DIEGO – Fairly simple changes in data reduction software would allow modern performance monitors to be used to intentionally obtain sensitive data from an otherwise secure computer system, Dennis R. Chastain warned here recently.

An analyst for the U.S. General Accounting Office (GAO), Chastain raised this point at a performance evaluation workshop run here recently by the Association for Computing Machinery and the National Bureau of Standards. The necessity for security must often be a greater concern, he said, than the measured performance of a system.

In discussing whether the measurement tools could be used to obtain sensitive data from the system, the GAO analyst said it would be "unreasonable to suspect" that the older hardware monitors made up of probes and counters could inadvertently access any specific data.

Software monitors might more easily record sensitive data inadvertently, but, again, the standard data reduction software would be unable to process such unexpected material.

Using monitors to intentionally obtain sensitive information from computer systems "is quite another matter," he added, noting that some hardware monitors now include minicomputers which could record alphanumeric data being processed by the mainframe.

Unlike security hardware; security software does cause some degradation in the performance of a system.

File access security, he noted, is basically a check at "file open" time to determine whether the user attempting to open the file has basic permission and clearance to access the file.

I/O processing security involves checks on every input and output instruction to insure, first of all, that the user trying to access the data is the one who processed through file access security at file open time. After that, a check will be made to determine his authority to do what he wishes with the file.

Data Transmission Security

Data transmission security software makes sure that both the terminal and the specific user at the terminal are authorized to receive data, before it is transmitted.

A properly designed system should not add overhead greater than 5% to 10% of any resource for these three levels of software security, Chastain said.

Actually, the task of measuring the effect of security software on the overall system can be difficult, Chastain admitted. Hardware monitors which can report activity at selected memory locations can be used, but traditional computer simulation packages such as Scert and Case cannot be used for this evaluation, because security software modifies standard supervisory software.

Models of the detail required have to be constructed in lower-level simulation languages such as Simscript, SAM or ECSS, he said, and the user has to have the same level of understanding of the problem as the original writer of the security software itself.

Software monitors, imbedded in the supervisory software, could be used to measure the effect of the security software, but the monitoring instructions themselves impose a degree of overhead on the system, Chastain noted.

'BBL' Aids Plans, Simulations

WALTHAM, Mass. – Basic Business Language (BBL), now available on the First Data Corp. remote-computing network, looks a great deal like conventional Basic but is specifically designed to cope with problems in the management sciences area.

The system provides about four times as many statement types as Basic and is aimed at three applications:

- Financial planning and reporting, including forecasting, budgeting, cash flow and similar operations.
- Risk analysis and monte carlo simulation.
- Imminent event simulation, queuing models and statistical analysis.

No Size Limits

BBL is said to impose no artificial limits on report size and complexity of data being presented. If too many columns are defined for the stated size of the paper, the system stores the extra data and prints it, with appropriate headings and spacing, on secondary pages after the basic portion of the report is complete.

Once developed, BBL routines can be cataloged for later stand-alone production use or for linking to other routines to create larger systems.

BBL statements support various financial functions and probability distributions. Results can be output on a line printer in graphic or tabular format.

BBL provides data types for definition and use of many frequently used deterministic and probabilistic functions.

Numeric List

To back imminent event simulation, the system includes a set of numeric list statements that define and process lists of data which can grow or contract in length.

Written largely in Fortran IV and developed by Core & Code, Inc., Wellesley, Mass., BBL is available on the network for First Data's normal resource charges plus a royalty surcharge.

First Data is at 400 Totten Pond Road, 02154.

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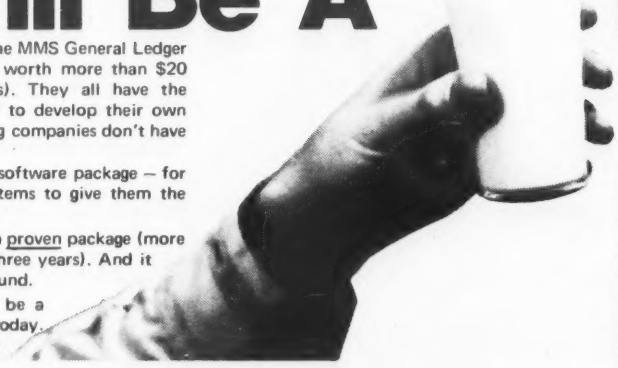

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'Bottomline' Predicts DP Costs by Job, Then Reviews Actual, Expected Results

MCLEAN, Va. – OS/360 users can generate forecast budgets for DP operations, in as much detail and for as long a period in the future as the user wants to consider, and later compare actual costs with the budgeted figures, with the Bottomline cost allocation package from Tesdata Systems Corp.

The report of actual costs can be used as a billing document, if the DP center works on a charge-back basis, or as an historic record of how much of the center's resources were devoted to each job. In any case, Bottomline also produces variance reports for management review detailing the reasons for any descrepancies between budgeted and actual costs.

Since the system is keyed to tables of user-defined charges for the various DP resources, and alteration of these table values can be made through control card entries, Bottomline also provides management with facilities for cost modeling and for predicting the effect of price changes before they are formally implemented.

The system starts through its report cycle by taking data about jobs expected to be run during the up-coming prediction period. This data should include the name of each job, the number of times it is to be run, its normal running time and the specific system resources – printers – it requires. Shifts, if significant, and dates on which the job is to be run are also entered.

This data, multiplied by the defined costs of resources, produces the predictive budget report, with the detailed information available to the users who requested the anticipated jobs, and the summary data available to DP center management with a forecast of what it faces.

Accounting data collected during actual production (via IBM's System Measurement Facility – SMF – or any other means), factored by the resource cost tables, form the base of the billing reports, the comparison to budgeted costs, and, if needed, the variance report of differences.

Tesdata sees Bottomline as a complement, and not an alternative, to both scheduling and job accounting systems. The new system allows users to see ahead of time what their anticipated DP operations are going to cost them, and to make value judgements about the proposed workload based on that knowledge.

The system operates in 130K bytes of storage under OS/360. No firm price has been established yet, but a Tesdata spokesman said he felt it might be made available to current users of the company's scheduling packages for around $10,000, and to others for somewhat more.

Tesdata is at 7900 W. Park Drive, 22101.

CSA Seeks Reactions To Draft Standard On Organization ID

REXDALE, Ontario – There apparently is no single code system that can be used across-the-board to identify organizations referred to on data files being exchanged by users. So a Canadian Standards Association (CSA) study group has proposed adoption of an open-ended scheme that would allow use of any of several identification code systems, as long as the system being used is itself clearly identified.

The proposed standard (Z243.16) is being distributed to the Sectional Committee on Computers for evaluation and comments from interested outsiders would be welcome, according to committee secretary, Hartley Rogers of CSA.

The proposal is much like one currently under study in the U.S. by the American National Standards Institute X3 committee. Both see that various code systems are in relatively broad use already, including Social Insurance numbers here and Social Security numbers in the U.S., and the numbers Dun & Bradstreet assigns to corporations.

Both proposals anticipate the use of a code identifier prefix, in addition to the specific number, so that receiving users will know what type of number they have to handle. Both groups anticipate the need for a central registration authority to control and allocate the code identifiers.

The Canadians note that their proposed standard would not provide for distinct identification of subdivisions of an organization. Critics of the U.S. plan are concerned that any standardized identification would provide an access key to other, more personal files on one-man organizations.

Standards for identification of individuals on files to be passed from one user to another have similarly been proposed in both the U.S. and Canada, and in both cases have run into comparable opposition.

Copies of the proposed Canadian standard are available from CSA at 178 Rexdale Blvd.

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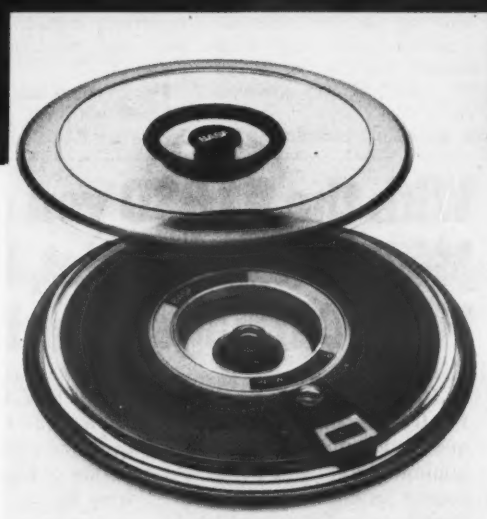

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Data Briefs

Microprogrammable CRT Includes Changeable ROM

SALT LAKE CITY, Utah – The Super Bee from Beehive Medical Electronics is a microprogrammable CRT terminal with its own built-in processor and detachable keyboard.

The unit has a read-only memory which can be changed for any input/output configuration or coding structure. The keyboard can also be changed to correspond to the application.

The terminal transmits data at rates up to 9,600 bit/sec and features an addressable cursor and upper and lower case characters. Some options include editing, polling and high-resolution video display.

The terminal costs $2,495 from 2600 S. 870 West, 84119.

T/S Terminal Suited for Multics

BURLINGTON, Mass. – Computer Devices, Inc. has introduced a portable time-sharing terminal designed for users of Honeywell's Multics system.

The 1030/Multics Teleterm features 128 upper- and lower-case Ascii characters and a keyboard similar to the Model 37 Teletype, the firm said.

The terminal has a thermal printer and weighs 22 pounds, the firm said.

Prices start at $3,350 or $97/mo on a three-year lease. Delivery is 10 days from 9 Ray Ave., 01803.

Mini-Based Processor for Banking

BOHEMIA, N.Y. – A minicomputer-based communications processor designed for banking and other financial users is now available from Periphonics Corp.

The Bank-Comm 7 can be interfaced to any central computer and any local or remote terminal network, a company spokesman said. It can also operate as a stand-alone system.

The processor is built around a PDP-11 mini and comes programmed to meet the user's particular terminal configuration and application.

A basic Bank-Comm 7, including a 4K mini, interface logic, line and mainframes interfaces, costs $35,000. Delivery is 4 months from Airport International Plaza, 11716.

Terminal, Cassette Interface

SALT LAKE CITY, Utah – The Univac 610 Tape Cassette System interfaces with the Uniscope 100 Display Terminal to provide expanded terminal data-handling capabilities.

The cassette system provides up to 1.4M characters of storage. It also allows the Uniscope 100 to operate unattended.

Purchase prices start at $1,800. One-year rental charges range from $70-$85/mo, or $57 under a 60-month lease plan. Deliveries are scheduled for the fourth quarter of 1973.

Is Bell Foot-Dragging?

DAA Installation Delays May Harm Users

By Ronald A. Frank
Of the CW Staff

MAHWAH, N.J. – Lack of information concerning the proper use of Bell Data Access Arrangements (DAAs) is hampering the installation of independent data terminals, according to a Western Union Data Services Co. survey. The study implies that DAA service is proceeding slowly in many areas.

Data Services supplies non-Bell TTYs and other terminals to users who must interconnect to telephone company facilities through DAAs. In many cases, incomplete interconnection data coupled with delays in DAA installations are affecting data users, the survey showed.

During a recent six-week period covering the installation of 1,780 terminals, more than 50% of the equipment was delayed due to some type of DAA problem, the survey found. Data for the study was gathered on a week-by-week basis and covered terminals across the country in all parts of the Bell System, and some areas served by independent phone companies.

States Vary

The problems become especially serious for interstate customers who have to deal with several Bell operating companies in different states. The lead times required to obtain DAAs can vary from two to 10 weeks, the survey showed. As an example, New England Telephone customers typically wait six to eight weeks for a DAA while the delay from New Jersey Telephone ranges from three to four weeks. And when a customer served by an independent phone company orders an access arrangement, the wait can be as long as three to four months, the study found.

In some cases, Data Services has purchased a connecting device for the independent phone company and helped local repairmen install the unit to expedite the operation for the customer.

In such instances the independent phone company was not familiar with the interconnection procedures needed to allow the use of customer-provided equipment, a Data Services spokesman said.

Because of the problems associated with customer-provided terminals, Data Services will soon publish a *Users Guide to DAAs.* The guide will include specifications and order codes for the three varieties of data couplers.

According to the guide, the CBS DAA is preferable to the CBT version for DP installations or usage with non-Bell data terminals because this equipment is "subject to possible interference from the CBT's relay electromagnetic radiation or contact bounce."

With the CBT unit, the user can obtain power from the terminal while the CBS coupler requires that phone company power by used, Data Services said.

To have automatic answer capability with the phone handset on the telephone for installations with CBT and CBS DAAs, the phone should be wired so the coupler controls the line with the ringer connected on the line side of the exclusion key, the company said. A telephone is not required with the CBT model if the user's terminal receives data in an unattended mode and there is no need for voice coordination.

Western Union Data Service's terminals at the sites covered in the survey include TTY Model 33s, 35s and General Electric Terminet 300s.

The DAA guide will be available by the end of May, a spokesman said. The company is at 16 McKee Drive, 07430.

Xynetics Adds Flatbed Plotter To Data 100 Remote Terminals

CANOGA PARK, Calif. – Xynetics Inc. has introduced a remote flatbed plotting capability for users of the Data 100 intelligent terminals.

The remote job entry system allows 360/370 Hasp users to operate a flatbed digital plotter at off-site locations for automatic drafting applications.

The capability allows Data 100 users to interface their Xynetics plotters and operate on-line; or the remote plotter can operate off-line using a magnetic tape generated on the terminal.

Punched cards are loaded into the Data 100 terminal system and transmitted to the CPU at 2,000 bit/sec. After processing by the mainframe, the output data is transmitted back to the terminal and directed to the Xynetics plotting system.

With an optional magnetic tape unit, the terminal can run in local mode at the remote site to produce output on the plotter. As part of the plotting capability, Xynetics supplies Fortran level graphics software for operation on the IBM CPU operating with Hasp.

For users with Data 100 systems, the plotting capability adds about $2,000/mo. The RJE terminal costs about $1,400 from Data 100, according to Xynetics.

Although not presently available, a spokesman said the remote plotter could also operate with other terminal/mainframe systems.

Xynetics is at Box 1450, 91304.

Sir 1000 Video Display Has Firmware-Programmed Modules

DEER PARK, N.Y. – Megadata Corp. has introduced the Sir 1000 video display system with a firmware-programmed processor.

Over 100 factory-supplied firmware modules are available to tailor the terminal system to such applications as IBM emulation, text editing, message formatting and code translation.

The Sir 1000 can be interfaced with thermal or impact printers and a floppy disk storage unit can also be attached. Synchronous, asynchronous and serial data can be handled and the system can include RS-232, TTL or other common interfaces.

The standard keyboard includes an alphanumeric Selectric-type font but additional character sets including Models 28 and 33 TTY, numeric pads and alphabetic clusters are available. The display includes a four-way cursor, fixed horizontal and vertical tabs and five cursor control keys.

The Sir 1000 can operate with most major CPUs including IBM 360/370, Univac 1200, Burroughs 5500, CDC, HIS, Xerox and other systems. The character repertoire includes upper-case Ascii, upper- and lower-case Ascii and special graphics.

The terminal cost ranges from $3,500 to $4,000 with 60 day delivery from 10 Evergreen Place, 11729.

Watchdog Group Formed

CHICAGO – A Telecommunications Trade Practice Committee has been formed by the Chicago Better Business Bureau.

Designed to develop a consumer awareness of the telecommunications industry and establish voluntary standards, the group will recommend procedures and review inquiries and complaints about telecommunication companies. The committee will also serve as a discussion group for the exchange of technical data.

Chairman of the group is George Gregg, president of Gregg Communications Systems, Inc. Members include Romney Harlow, president of Private Telecommunications, Inc.; Charles Popp, vice-president of MCI; and Richard Smith, assistant vice-president of Illinois Bell Telephone Co.

The Better Business Bureau is at 430 N. Michigan Ave., 60611.

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Bits & Pieces

Itel Offers 158 and 168 Users Monolithic Memory

SAN FRANCISCO – Itel Corp. has monolithic main memory for the IBM virtual storage models 158 and 168.

The speed and technology of the Itel memory are identical to its IBM counterpart, according to Itel. Itel will also match IBM's design capacity, 4M bytes on the 158 and 8M bytes on the 168. First delivery of the 158 memory is set for November 1973, and March 1974 for the 168. Prices will be "10% to 15%, below IBM, an Itel spokesman said. The firm is at One Embarcadero Center.

Turnkey Systems for Small Firms

CAMBRIDGE, Mass. – Two turnkey minicomputer-based business systems for accounting and order-processing applications are available from Input Output Computer Services, Inc.

The accounting system includes payroll, accounts receivable, accounts payable, general ledger and labor distribution programs.

The order-processing system handles order entry, invoicing, inventory reporting, sales analysis and accounts receivable.

Basic hardware in the systems is the DEC Data System 300, using the PDP8/e as the central processor. Other components include a disk for random access storage, line printer, video display terminal and magnetic tapes.

Price for the accounting system is $45,000. Price for the order-processing system is $48,000.

Third-party leasing is also available from 138 Mt. Auburn St., 02138.

'Naked' Cassette as Fast as Tape

IRVINE, Calif. – A cassette system with search speed capabilities comparable to magnetic tape decks is offered by Computer Automation for use with the firm's Naked Mini and Alpha minicomputers.

Available in single, dual, triple or quadruple configurations, the system reads and writes at 12 in./sec and searches at 120 in./sec. Single cassette storage is about 250K bytes on a standard 300-foot tape.

In direct access mode, the system devotes one of its dual tracks to prewritten address marks so that the entire length of the tape can be treated as a sectored disk, the firm's spokesman stated.

"This means that the entire tape can be searched with a nominal access time of 10 seconds, about 10 times better than most cassette systems, . . . and in the performance range of magnetic tape systems," he added.

The complete single-cassette system, including transport, interface controller, cabling and software, is priced at $2,850 from 18651 Von Karman, 92664.

'Step' Up Enhancement

User's 360/22 'Just Like' a Model 30

By E. Drake Lundell Jr.
Of the CW Staff

OLD SAYBROOK, Conn. – "We can't tell the difference between a 360/30 and our enhanced 360/22 except when it comes time to pay the bills."

That is the claim of Andrew Speare of the Kramer Division of Conarc who has been serving as a "Beta test" user for the past five months for the Step-22 storage enhancement package made by Information Control Corp. The enhancement package is available from Genesis One Computer Corp.

Speare stated the enhancement for the Model 22 has so far enabled the firm to save over $2,000/mo compared with a 360/30 with comparable operating efficiency.

Further, Speare implied, the Model 22 may be upgraded to operate like a 360/40.

Channel Is Basis

The basis of the Step-22 unit is a selector channel which allows the Model 22 user to upgrade his system from 64K bytes to up to 128K bytes of main memory and permits attachment of 2314 and 2319 disk subsystems.

The 360/22 is an ideal machine for this type of upgrading, Speare asserted, as the Model 22 is basically a Model 30 with slower channels.

The internal cycle speed of 1.5 μsec is identical for the two machines, but the 22s from IBM were only able to handle the 2311-type disk drives as the channel could not operate fast enough for the faster 2314s and 2319s, he noted.

The unit comes in a basic configuration of just the selector channel enhancement which allows users to attach two 2314s. This is the equivalent of six or seven 2311s, a spokesman for Information Control said.

A basic 360/22 configuration renting for $2,175/mo on a two-year lease, the firm said, includes the cost of both the controller and the disks.

A maximum configuration of 128K bytes of memory and nine 2314 drives (one a spare) and the controller rents for $5,340/mo, the firm added. Both prices include maintenance, ICC noted.

Presently the only question concerns maintenance for the CPU used in the system, Speare said.

IBM has inspected the system and said that if it had a switch to return the system to its original condition it would be maintained – even though IBM rejected the system on the first inspection, Speare added.

Missed Switch

"Obviously they missed the switch, an ICC official said, "since the system is equipped with one." A second inspection of the system has already taken place and Speare is awaiting the results.

The system should open up a new alternative for users considering upgrading or turning to leasing companies for their equipment, Speare felt.

A 64K-byte 360/30 rents for $9,080/mo with two 2314 drives for a total on-line storage of 60M bytes. The same unit from leasing companies with all independent peripherals is presently going for around $6,706/mo based on a typical 55% net lease.

A Model 22 central processor rented directly from IBM, with the Step-22 feature will cost approximately $6,296/mo – about $2,800 under the IBM total system price and $500 under the leasing company price.

The problem of getting the 22 to perform equivalent to a 360/40 is more difficult since the 40 fetches two bytes on each cycle while the 22 and 30 fetch only one.

However, Computer Hardware Consultants and Services has developed an accelerator for the Model 30 that permits it to fetch two bytes on each cycle. The Information Control memory with the Step-22 system is also a 2-byte configuration, sources noted.

ICC officials, however, said they were not ready to claim 40-like performance for the system, but Speare said he saw no reason the system could not resemble the 40 unless IBM had incorporated some registers unknown to him.

LEC Unveils Data Entry System

PLAINFIELD, N.J. – Lockheed Electronics Co. (LEC) has unveiled a data entry system built around LEC's MAC 16 minicomputer and an intermediate disk storage subsystem.

The Data Entry/Management System is a shared processor system that edits, formats, verifies and stores data entered through typewriter-like, video display and keypunch replacement terminals.

Hardware configuration for the system consists of the MAC 16 mini, up to 32 terminals (one of which is the supervisor's terminal), magnetic disk subsystem, magnetic tape drive and cassette tape reader – for program entry.

In addition, the system can be expanded with a medium-speed line printer, additional core memory and disk storage.

The supervisor's terminal can transfer disk-stored data to magnetic tape for subsequent processing on a central larger computer. This operation can be performed at the supervisor's discretion, and is done without interrupting the other operators.

The data entry terminals provide alarms, checks and interlocks to assist operator accuracy and throughput. Further, the keypunch replacement and video display terminals incorporate a display that indicates status information and shows error messages, including instructions for the next operator step.

The medium-speed printer option permits printing data stored in the system or from magnetic tape. This capability is designed for users with audit requirements or a need for off-line balancing.

In addition to a full line of operating software, the Data Entry/Management System includes a program for logging and printing out operator and system performance statistics.

This data can be used to determine operator training requirements and measure system efficiency.

The shared processor – MAC 16 – has a 1 μsec cycle time, 16-bit word size (2 char. byte/word), 8K words of memory, expandable in steps to 4K to 128K.

The disk subsystem provides 5M bytes of storage in a standard configuration. The disk controller permits up to three additional drives to be attached for a total of 20M characters of storage.

The tape drive and tape controller are designed for writing on IBM-compatible standard one-half inch tape. Options of 556 bit/in. 7-track, as well as 800 and 1600 bit/in. 9–track, are available.

The cassette system utilizes a Sykes cassette drive operating at 2 in./sec. Maximum character capacity is 300K characters.

Keypunch replacement terminal (foreground) and video display terminal (background) are two of three standard terminals available with LEC's Data Entry/Management System.

The system can also be provided with a Data Products Model 2310 line printer. This provides 80 columns of printing or alternatively the 2410 printer can offer a 132-column capability.

LEC will provide application and maintenance services through its own service organization. Systems will be sold or third-party leased with a typical 20-station system costing about $180,000 from U.S. Highway 22, 07061.

An 1800-line-per-minute run for your money.

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'Wizards for Wizards'

Thinking Multiprogramming? Consider Decsystem 10

By Michael Weinstein
Of the CW Staff

In certain situations, users are finding that the Decsystem 10 is cheaper and more powerful than the lower end of the IBM 370 series.

While this does not indicate that the system is better for all users considering multiprogramming operations, it does suggest that users so inclined should add the Decsystem 10 to their evaluation lists.

For the most part, IBM systems were developed from batch-processing systems

Analysis

onto which terminal-oriented and interactive operations were grafted.

In contrast, the Decsystem 10 began as an interactive and time-sharing system that later acquired batch capabilities.

Thus it follows that in other than the super-large applications the DEC system is better at interactive work while the IBM units are better at batch processing.

Weaknesses of the Decsystem 10 – and its relative low profile for the average user – are to a large degree manifestations of Digital Equipment Corp. itself.

While DEC has always built good hardware, it has been under the philosophy of computers built "by wizards for wizards."

Much more than IBM, the firm has left the operation of systems – once they leave the production floor – to the users.

Further, the "wizards for wizards" view has led to an inadequate library of applications routines.

Leave It to User

It is assumed that the user knows what software he wants and will write his own.

On the operations side, DEC is far more helpful and personnel at the Maynard, Mass. plant appear quite accessible to discuss technical or other problems.

IBM's historical role is one of providing black box-oriented systems. IBM provides what many users feel is the best support available with users having easy access to a large number of applications software and other support.

Once again the basic trade-off of moving to a non-IBM source comes into play: users trade support and assurance for cost savings and greater power.

For many users this trade is worth considering – especially if they have the expertise to "carry it off."

Center Serves Micrographics

NEW YORK – The Microfilm and Information Technology Center (MITC) is an exhibition and information supply center dedicated to micrographics and data processing equipment.

Located at One Park Ave., the center provides Greater New Yorkers with a centralized source to meet manufacturers, service organizations and publishers serving the microfilm, telecommunications and related information technology fields.

Diablo Printer Added To Datapoint Series

SAN ANTONIO, Texas – A 30 char./sec impact printer, the Diablo, is available from Datapoint Corp.

Added to the firm's line of peripheral attachments available with the Datapoint 2200 minicomputer, the Diablo servo-driven printer uses the standard multipart 132-column form and ties directly into the Datapoint 2200.

Printing either forward or backward, the printer also can "slew" across blank areas at the printing rate. Where text justification is needed, incremental spacing is possible to 1/60th of an inch. Paper, fed via friction or sprocket, can move vertically in both directions, thus allowing graphic application.

Purchase cost is $6,300. One-year and two-year leases are available at $156/mo and $141/mo, respectively. Maintenance is $35 with installation at $120. Delivery is 10 weeks from 9725 Datapoint Drive, 78284.

Electrostatic Reader Makes 30-Sec Prints

ROCHESTER, N.Y. – An electrostatic reader-printer delivering dry 18 in. by 24 in. positive prints – either aperture card or roll form – from 35mm microfilm in 30 seconds is available from Kodak.

Within the Ektron unit, a 2-lens turret provides both 14.5X and 10X magnifications on an 18 in. by 24 in. viewing screen, a spokesman said.

Print density is controlled by a single knob that regulates the exposure intensity and exposure time.

For multiple printing of the same image, a repeat control is available with all prints cut from 400-ft rolls of electrostatic paper.

Cost of the Ektron unit is $6,545 from Business Systems Markets Division, 343 State St., 14650.

Power Supply Can Handle 220V Sources at 250 mA

NEW YORK – A high-voltage power supply, capable of delivering up to 15KV dc average at 250mA when operated from 220 V lines, is available from Spellman High Voltage Electronics Corp.

The Model RS217 consists of a single-phase high-voltage transformer and bridge rectifier in an oil-filled tank.

If a variable auto transformer is used on the line, the power supply is adjustable from 0 to 20KV dc.

Single unit price is $750 with volume discounts available from 1930 Adee Ave., 10469.

Microfilm Reader Operates On Flashlight Batteries

MENOMONEE FALLS, Wis. – The Realist Compact microform reader "is the first big screen (8 in. by 11 in.) portable reader to offer flashlight battery operation," according to a spokesman for Realist Inc.

In addition to battery operation, the reader can operate on any standard AC voltage, he added.

The reader comes with dual magnification and a built-in storage compartment that will accommodate 200 microfiche or almost 20,000 pages of information.

Price is under $100 from N93 W16288 Megal Drive, 53051.

How do you keep work assignments and payrolls straight for over 23,000 longshoremen?

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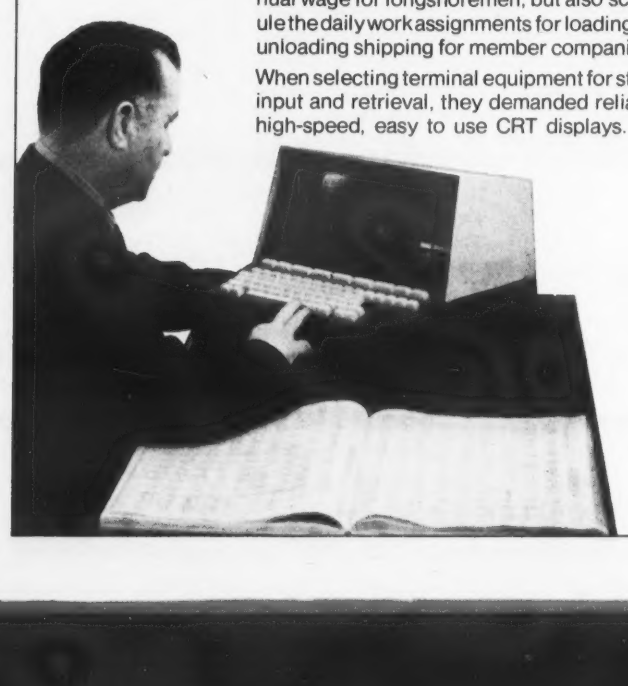
Find out why ITT's ALPHASCOPE display systems can solve *your* problem, too. They're produced by a major communication company, with broad data experience. For details on ALPHASCOPES and the new low-cost ASCI-SCOPE™ teletype-compatible display, call Gerry Porter at (201) 935-3900...or write ITT Data Equipment and Systems Division, East Union Avenue, East Rutherford, N.J. 07073.



DATA EQUIPMENT AND SYSTEMS DIVISION ITT

Includes Tenant Accounting

S/3 Handles Realty Management Records, Reports

AKRON, Ohio – Weaver-Rosca Realty is using a small DP system to support its diversified property management organization.

Since the computer came on the scene, the firm has enjoyed a business explosion, with increases in volume of more than 400%. Wanda Weaver, secretary of the company, gives DP system much of the credit for the firm's ability to handle a staggering additional work load, while, at the same time, improving services to tenants and owner-clients.

"Without the System/3 Model 10, our office staff would be swamped with accounting detail and paperwork," said Weaver, who designed the many computer applications.

"More important," she added, "we would not be able to apply the property management techniques, or provide the owner reports that have been important factors in the rapid growth of our client list."

Range of Properties

Weaver-Rosca now manages about 2,000 residential, commercial and industrial rental properties, representing millions of investment dollars. The properties range from small dwellings to large shopping centers, and from medical and professional buildings to industrial parks.

Virtually every facet of both the property management and the realty brokerage operation has been tailored to the capabilities of the computer. This includes a massive, complex tenant accounting system.

"It is not unusual for upwards of $100,000 worth of tenant checks to arrive at our Akron headquarters on any single day around the turn of the month," Weaver noted. "Each payment has to be credited to the corresponding tenant record, and applied to the appropriate tenant account – rent, security deposit, utility charges and late charges. The income accruing to the property owner must be accurately distributed according to each individual owner's general ledger requirements. The day's receipts have to be balanced, then prepared for entry into our general ledger records.

"With our old manual system, this heavy a workload would have tied up our office staff for days," Weaver pointed out. "But, with the computer, we handle the job in only a little more than two hours. At the end of the day, the computer produces a full, detailed recap of the day's transactions, by property and by account – receipts, payments and deposits.

"The System/3 provides the necessary general ledger entries in punch card form. Within minutes, we can review the current status of any tenant account, the income and expense position of any owner account, or review the up-to-date profit and loss situation for any property."

To accomplish all this, Weaver, with the help of a professional programmer and data processing supervisor, has developed a comprehensive set of tenant master records and a set of computer control programs. Each tenant master file is created at the time a new tenant signs the lease agreement, and is updated to reflect all subsequent tenant transactions.

Identification Link

The master file record provides an identification link between the tenant and property owner. The first three digits of a seven-digit record control code identify the owner, and the last four digits identify the tenant. The file record includes the tenant's name and property address, the rental and security deposit, late charges, the lease expiration date, and individual gas, electric and water utility information and for retail tenants, gross sales percentages for calculation of overages due.

The record also accommodates the recent rent stabilization rulings of the Federal Government, in that it includes the base rents and the maximum allowable rents, as well as the current rental amount.

The Small Systems User

"The entire computer system is expressly designed to better serve our clients – the property owners – and to safeguard their interests," Weaver explained. "The outstanding contribution of the system is the management reporting which the computer provides to the owners. They not only get complete, reliable and meaningful information about their property, they receive it in a form that enables them to evaluate their real estate investment performance in overview, as well as in detail, on a current and cumulative basis."

The "Property Management Report," for example, gives the owner current month and year-to-date receipts and expense totals, the monthly proceeds and the balance forward.

Another computer-produced document sent to the owners each month is a profit and loss statement that derives from the property general ledger records, and also incorporates assets and liabilities.

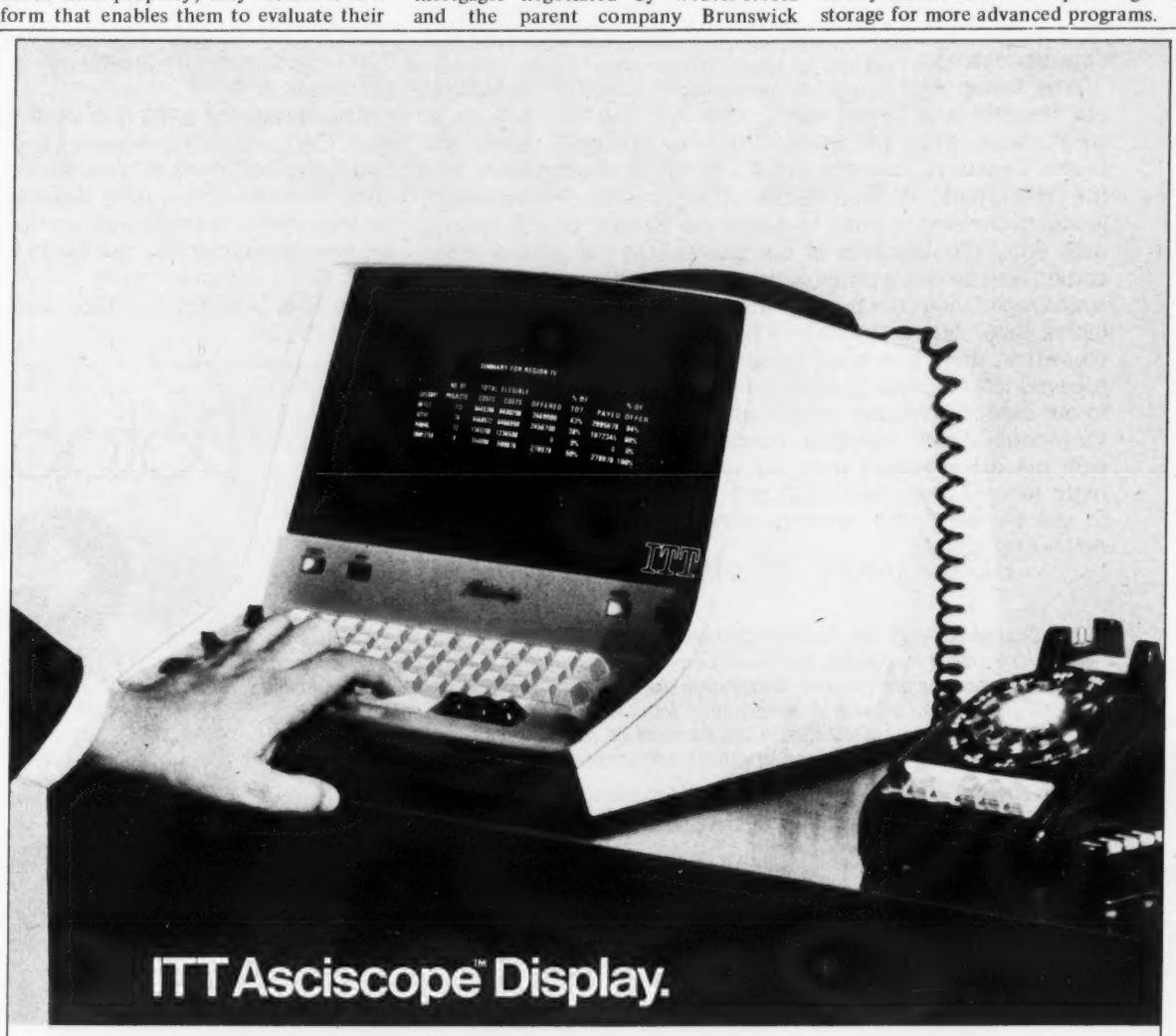
Tenant accounting and owner reporting are the biggest applications but a third major function is land contract accounting. Weaver-Rosca currently has approximately 350 clients who purchase property on contract.

Mortgage transaction processing is also handled by the computer. It involves mortgages negotiated by Weaver-Rosca and the parent company Brunswick Realty, and for owner clients. The master file record provides the property address, mortgage amount, interest rate, monthly payment and deposit into escrow.

The system relates the mortgage to the bank loan number. The computer further calculates principal, interest and escrow payment amounts, writes the checks and, for owners, amortizes the mortgage.

Other functions handled by the system include accounts payable, receivables, payroll, including all tax reports and general ledger accounting, as well as financial reporting. At present, Weaver and her staff are also developing a critical path analysis program to help control budgeted versus actual costs on new construction projects.

Weaver-Rosca plans to upgrade its computer to a magnetic disk storage System/3 which will provide direct access to any master file record plus larger core storage for more advanced programs.



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Datapoint delivers at Executive Data

Executive Data Systems, Inc., Cedar Rapids, Iowa, is a national leader in supplying computer utility services to the health care field. Currently over 100 hospitals and health centers are subscribers to Executive Data's computing services for applications in general administration, patient accounting, medical diagnosis, laboratory analysis and many other critical areas. The great majority of Executive Data subscribers are now utilizing Datapoint 2200 systems and printers as on-site terminals for data entry, for data communications (to Executive Data computers in Cedar Rapids) and increasingly for on-site data processing.

Why Datapoint? "The Datapoint 2200 meets the needs of our hospital and health center clients more fully and more satisfactorily than any other computer system," notes Don Olson, Executive Data president. "Its full programmability and the availability of DATABUS, a high-level programming language, makes it easy to adapt the system to the varying data entry requirements of our clients. On the 2200's video screen we can display the precise format for data to be entered, which, combined with programmed error checks, virtually eliminates input errors. Since the 2200 is as easy to use as a typewriter, there's no need for special operator training as with a keypunch machine. During the day the transmission of data to our central computer occurs automatically, without the need for manual dialup. Similarly, needed management reports are sent out automatically from our central computer during the night to an unattended 2200 printer, ready for management to use the very next morning, when the information is really timely and useful."

Every hospital and health center has varying needs for computer service, which can range from simple bookkeeping to sophisticated computerized analysis. Executive Data's approach is to provide these services on a modular basis. "Because the 2200 is a fully programmable general computer, it can handle much of the burden of editing and pre-processing of data," said Mr. Olson. "This relieves much of the overall processing load on our large central computer systems. Additionally, as hospital users grow more sophisticated and demand more and varied applications, we expect to see the Datapoint 2200 used more frequently as a supplemental independent processing unit."

The Datapoint 2200 and associated peripherals have delivered the goods for Executive Data Systems and its numerous hospital subscribers in a variety of applications in data entry, data communications and dispersed data processing. Prices on this unique system begin as low as $6,040. For information on how this capability can be put to work in your operation, contact the Datapoint sales office nearest you or write or call: Datapoint Corporation, 9725 Datapoint Drive, San Antonio, Texas 78284.

Datapoint

"The Datapoint 2200 has been a key factor in the continued growth of Executive Data and in our ability to provide the finest computing services in a modular and economic fashion to our clients. As the health care field grows more aware of the capabilities of our service in combination with Datapoint systems, I anticipate a steady rise in the number of our subscribers and in the processing volume we undertake for them."

Don Olson, President,
Executive Data Systems, Cedar Rapids, Iowa

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Regional Supplement to
COMPUTERWORLD
April 18, 1973

The Computer Caravan/73

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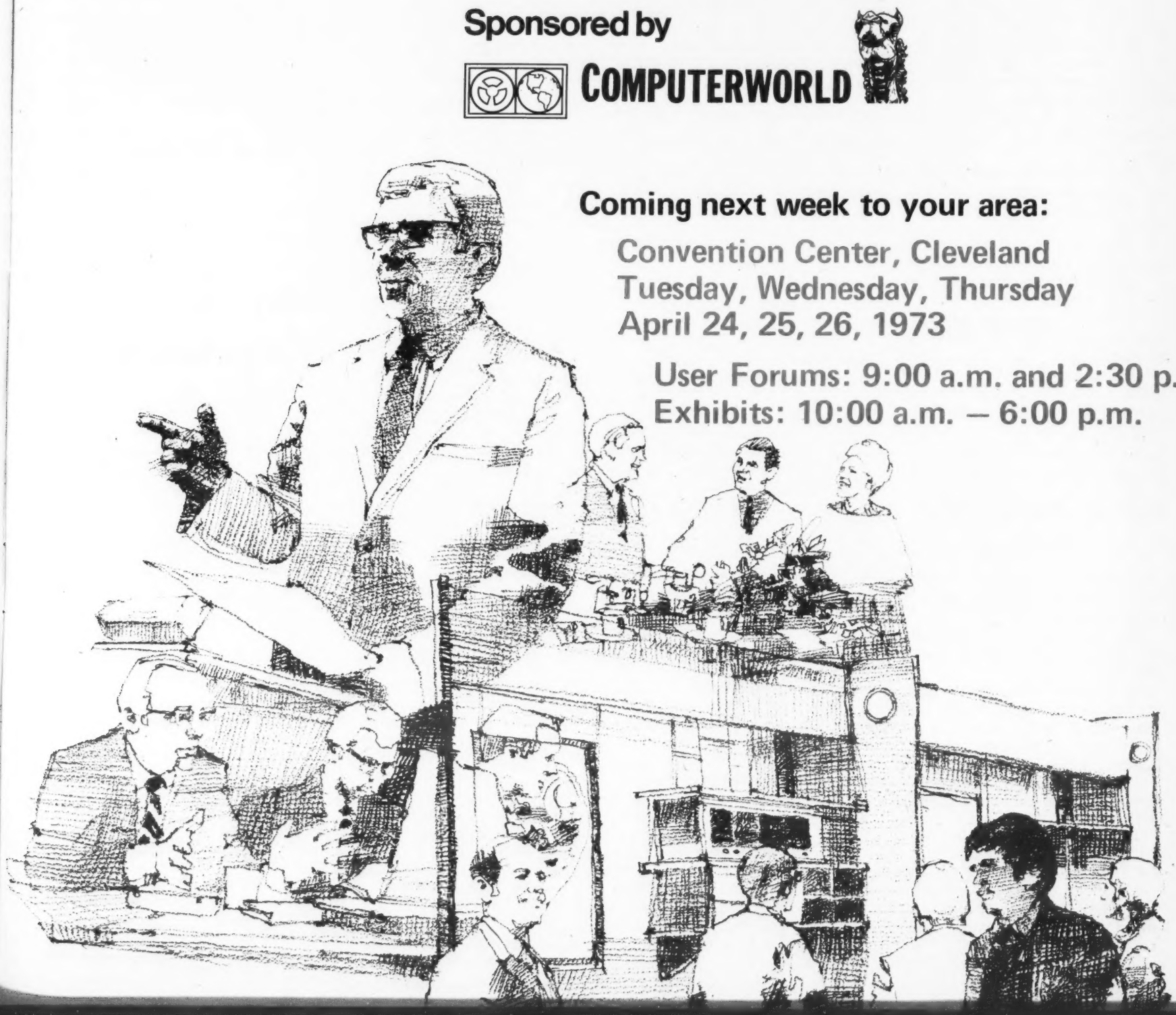

Coming next week to your area:

Convention Center, Cleveland
Tuesday, Wednesday, Thursday
April 24, 25, 26, 1973

User Forums: 9:00 a.m. and 2:30 p.m.
Exhibits: 10:00 a.m. – 6:00 p.m.

All Attendees Welcome At Afternoon Sessions

Day 1: Hoxie Hits New 'Commo' Lingo

Data Communications jargon is expanding rapidly as technological developments bring new facilities and devices to the markeplace, says consultant Gilbert H. "Gib" Hoxie.

However, he has found that certain often neglected management aspects of data communications planning usually tend to outweigh esoteric technical factors.

Hoxie, a manager in the Informaton Systems Division of Booz, Allen & Hamilton, Inc., addresses the topic of Data Communications Planning on the opening day of the Computer Caravan.

He believes systems planners intending to install or expand data communications applications would be wise to include a "wide range of management considerations" in their analysis.

Answers to the nine questions below may be "key to designing the right system," Hoxie adds.

1. What information systems do we have (need) and why?
2. Which applications require data communications?
3. How well do alternative data communications systems satisfy requirements?
4. What will be the true one-time and operational cost?
5. What will be the true one-time and operations benefits?
6. What will be the impact on users and work-flows?
7. Who are the vendors, and what are they selling?
9. What techniques are most effective in selecting and presenting the best design?

Hoxie attempts to answer these questions during a tutorial on Data Communications Planning, given at 2:30 P.M. on opening day of the Computer Caravan. The open, general session may be attended by people wearning any Computer Caravan badge, i.e. exhibitor, exhibitor-guest, exhibits-only, or Forum program for any day.

Although the presentation will last about an hour, it is anticipated that attendees will have questions for Hoxie.

Beware: Intangible Benefit

Hoxie does not believe in "intangible benefits" of systems, or at least not during the process of cost justification.

"If an analyst can't hang a number, or range of numbers on a 'benefit,' he has no business citing it even as particial justification for a system," he remarks.

"Intangible benefits," which he regards as one of the "major pitfalls for systems planners," only represent "snares and delusions for the individual who must select an alternative, and he is bound to come out on the wrong end of any ensuing conflict," according to Hoxie.

He thus advises that "80% to 90% of intangible benefits can be quantified and user commitments obtained. Those that can't be defined and sized, usually are excluded from the benefits analysis and if they appear in a report at all, are downplayed."

Hoxie's speech is an addition to the Caravan program, in that any Caravan attendee is eligible for admission; it actually sets the stage for the middle-day Forum program, which is devoted to management and operational considerations of data communications.

Last year, three "keynote" speakers toured the country with the Computer Caravan, but the time for these speeches has been given over for extended panel discussions and workshops, a direct result of feedback from the users who attended the 1972 Forum.

The workshops resume after lunch, concluding at 2:30 P.M. At this time, Forum and Exposition attendees may sit in on the open, general sessions on each day. Hoxie's tutorial is given on the first day, a Software Evaluation panel takes place on the middle day and a Small Systems panel is held on closing day.

President's Message

The basic concept of the Computer Caravan is: a national computer conference that travels to you, the computer user.

The fact that the people staffing the exhibit booths are, for the most part, local sales representatives will be appreciated by all those who visit the exhibit. These representatives of DP suppliers will still be here, long after the Caravan has departed.

The idea of tailoring a national conference to the needs of local users is carried to a higher degree by some of the individual exhibitors, who have planned special seminars oriented towards their particular product or service.

Attendees at last year's Caravan said they liked this type of individualized presentation, and more exhibitors have responded by scheduling these seminars.

Whether your main interest is in hardware, software, or services, the leading companies in each sector of the EDP industry are found in our exhibit hall. Both their sales and their technical personnel are prepared for your probing questions on their products, many of which are being introduced on the Caravan, while others are already proven in the field.

Your comments on our program are welcome. Feel free to note your suggestions with *Computerworld* representatives on the exhibit floor, or in the *Computerworld* booth. We are here to serve you; please tell us how we may best accomplish that goal.

Patrick J. McGovern
President, Computerworld, Inc.

Day 2: Panel Probes Software Sources

The Software Evaluation panel is one of three "open" sessions that take place during the afternoons of the Computer Caravan.

These sessions may be attended by people wearing any caravan badge, such as exhibitor, guest, exhibits only, etc.

The Sofwtare Evaluation panel is aimed at examining various sources for applications and utility software; paraphrased, it is a "make-or-buy" round-table discussion, and the audience will be invited to take part.

In general, panelists will follow the outline below. If time permits, questions of a broader nature will be entertained.

I. Evaluating the alternatives
- Where do you start
- The main criteria, how to weigh them
- When you have done enough looking?

II. Pricing, measuring techniques (this relates to first topic, but might be more specific as to cost/CPU time/volume of reports, etc.)

(Continued on S/Page 5)

Day 3: Small Systems Described by Users

Small businesses with computers and businesses with small computers are not necessarily identical, but they will be sharing the stage during our Small Systems panel, on the afternoon (2:30) of the final day.

This panel is designed to give a broad overview of the types of systems available, and the problems and opportunities presented by these computers.

In many instances, such systems are chosen by company presidents with little or no DP experience; in other cases, on-line systems may be operated by clerical personnel.

In all cases, it appears small computers are proliferating the business community at an unprecedented rate, and this panel session attempts to take a snapshot of local small-computer usage today.

Again, panelists will be following the outline below, and any questions of a broader nature will be taken, if time permits.

I. Planning
- Discovering the need (growth; new business;

(Continued on S/Page 5)

Many Titles Suit DP Conferences

Few generalities can be applied to the Computer Caravan, with one possible exception: computer conferences are many things to many people.

The 1973 edition of *Computerworld's* traveling show is the distillation of user and exhibitor recommendations after our 1972 debut; most people approved of the local concept, since it afforded them an opportunity to speak with users and DP suppliers from their own region.

This has remained unchanged.

Again, local and regional users comprise the panel discussions and will be leading workshops.

Again, local sales and technical representatives will be staffing the booths in the exhibit hall.

The Computer Caravan, then, is a management conference with a program geared to increasing the operational efficiency of computer centers.

It is a business exposition, with the latest in computer hardware, software and services on display.

It is a showroom for exhibitors,

(Continued on S/Page 6)

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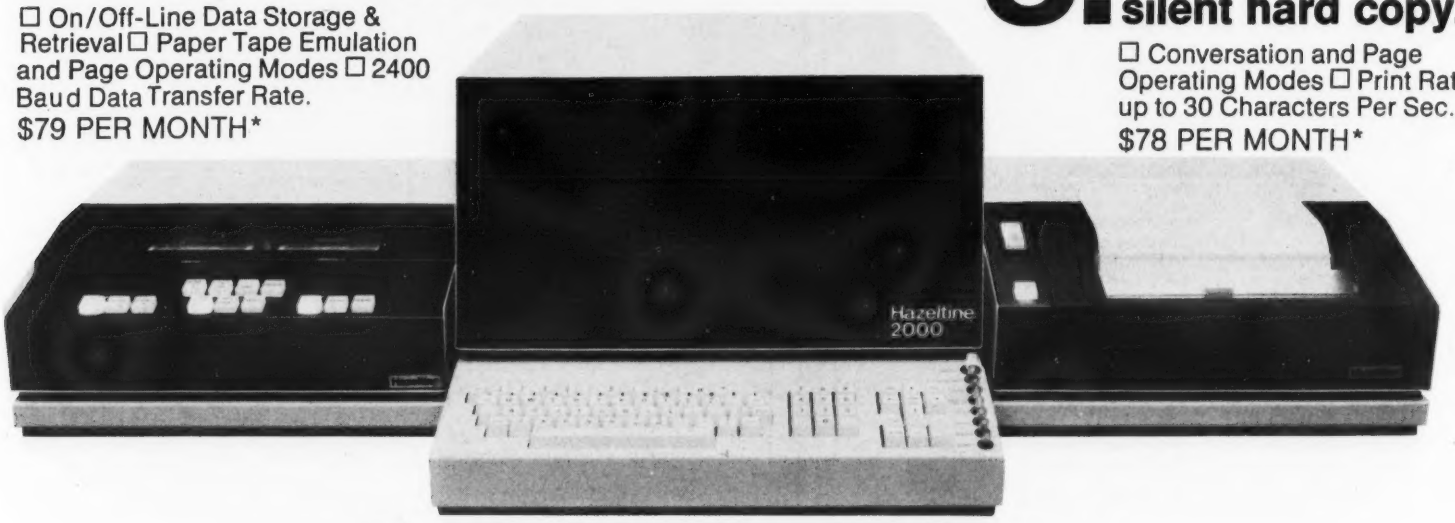

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Visit our caravan booth – or better yet – attend a Cullinane seminar at any of the ten caravan cities.* You'll get all the details on the newest version of the EDP-AUDITOR/CULPRIT system as well as the latest enhancements to the Data Base Management versions (IMS/CULPRIT, TOTAL/CULPRIT, and RDMS/CULPRIT).

The CULPRIT family of systems has been among the most successful in the industry because we've always stayed well ahead of the industry.

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- ☐ Redefinition of output lines to allow greater output format flexibility.
- ☐ 8-character field names for improved data dictionary mnemonics.
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- ☐ Parameterized file matching (user specifies size and location of keys at run time).
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- ☐ RCA 301 Series tape read module for reading RCA 301 tapes directly on IBM computer.
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DATA BASE MANAGEMENT VERSIONS

IMS/CULPRIT

- ☐ User may provide SSA's to allow selected segment retrieval or to access segments randomly.
- ☐ 8,192 byte segments or segment strings allowed.
- ☐ Access two or more IMS files at the same time.
- ☐ Access non-IMS files during an IMS run.
- ☐ Access HDAM, HIDAM, HISAM files, physical or logical.
- ☐ Enhanced data dictionary capability.
- ☐ Also includes all features listed above under CULPRIT.

RDMS/CULPRIT

- ☐ Information available from the Control, DATA, and XREF portions of RDAM records.
- ☐ Automatic expansion of compressed format data fields to any size desired by the user.
- ☐ Employs cataloguing feature eliminating need to define logical fields in report parameter cards.
- ☐ Processes a virtually unlimited number of strings through the data base.
- ☐ Reads initial driving file in a string either directly or sequentially. All other reads are direct.
- ☐ Direct reads can be based on keys submitted by user and/or keys read from a non-RDMS file.
- ☐ Chaining across files through XREF entries handled automatically by the system.
- ☐ Handles single file record cross referencing techniques (e.g., Bill of Materials organization).
- ☐ Includes all features listed under CULPRIT sections.

TOTAL/CULPRIT

- ☐ Information available from the entire TOTAL record including root and linkage segments.
- ☐ Employs a cataloguing feature eliminating the need to define logical fields in report parameter cards.
- ☐ Processes a virtually unlimited number of strings through the data base. Each string may be several files long.
- ☐ Reads initial driving file in a string either directly or sequentially. All other reads are direct.
- ☐ Direct reads can be based on keys submitted by users and/or keys read from a non-TOTAL file.
- ☐ Linking between files and reading of variable chains handled automatically by the system.
- ☐ Handles multiple linkages between a master and/or variable file (e.g., Bill of Materials organization).
- ☐ Access all types of files.
- ☐ Includes all features listed under CULPRIT section.

*Free Tickets:

pay $5 at the door . . . or . . . if you plan to attend the Cullinane seminar, drop us a note for free ones (while they last) plus an advance brochure on any system listed above. Cullinane seminars will be held from 4 to 5 p.m., second day of each session, immediately after software forum.

Cullinane Corporation

One Boston Place, Boston, Massachusetts 02108. Telephone (617) 742-8656.

Exhibitors Set Special Seminars

The following exhibitors will be sponsoring seminars in the various cities visited by the Caravan. Consult the table below for times and cities. Check with individual exhibitors for exact topics in each city and availability of space.

DAY 1	Boston	Washington, D.C.	New York	Atlanta	Houston	Anaheim	San Francisco	Kansas City	Chicago	Cleveland
2:30 p.m.										
Iomec	★	★	★	★	★	★	★	★	★	★
4:00 p.m.										
Sycor	★	★	★	★	★	★	★	★	★	★
DAY 2										
2:30 p.m.										
Iomec	★	★	★	★	★	★	★	★	★	★
Interdata	★	★	★	★	★	★	★			
ICC	★	★	★	★	★	★	★	★	★	★
Varian*		★	★	★		★				★
3:30 p.m.										
Tektronix			★	★				★	★	
Varian*		★	★	★		★		★		★
4:00 p.m.										
Cullinane	★	★	★	★	★	★	★	★	★	★
Infotron	★	★	★	★	★	★	★	★	★	★
4:30 p.m.										
Varian*	★									
DAY 3										
4:00 p.m.										
Western Union Data Services	★ (may run in all cities based on Boston interest)									
BCS				★						

*By invitation only.

Need Minicomputer application data ?

GET IT IN WRITING AT CINCINNATI MILACRON

When you visit the Cincinnati Milacron exhibit at the Computer Caravan, we won't just talk minicomputer capability . . . you'll get it in writing. Application specialists will be there to help you with your specific needs . . . they'll be able to tell you what's needed, how it will work and what it will provide. They'll be backed up by a minicomputer system that will provide component and unit pricing . . . in writing. If you want specific application information, you'll get it at Cincinnati Milacron . . . in writing. Process Controls Division, Cincinnati Milacron, Lebanon, Ohio 45036.

minicomputers

CINCINNATI MILACRON

Caravan Staff

From the several offices of the vast *Computerworld* organization comes the staff that has supported and is now conducting the Computer Caravan.

This staff is composed of former show people, current industry figures and sales experts, editorial people, and the all-important registration and office personnel.

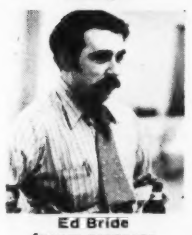
The variety in their backgrounds is too detailed for presentation here, especially since all are full-time computer-conference specialists for late Winter and early Spring 1973.

The hundreds of hours of extra work, weeks and months of travel, and the valuable experience during all this hectic activity both this year and in 1972, are all reflected in a bigger Exposition and a more comprehensive Forum program for Computer Caravan/73.

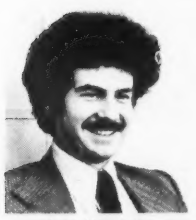
Here are the people that are making it all possible. A special message from the Publisher and Caravan President is found on page 2. Special acknowledgement goes to Leslie Flanagan, who did all this photography work; not pictured is Bob Rankin, caravan manager, who was on the road during the entire time that this section of the Caravan Supplement was being "put to bed."


Neal Wilder
exhibit sales
manager


Dottie Travis
exhibit sales
administrator


Ed Bride
forum manager


John Meade
caravan activity
coordinator


Leo Bowser
caravan manager


Edward "Ted" Bloom
registration director


Tamar Shapiro
asst. registration
director


Frani Blackler
caravan secretary


Linda Collins
caravan secretary


Beverly Butters
caravan secretary

Day 2: Panel Probes Software Sources

(Continued from S/Page 2)

III. What-if (recovery techniques)

• How to recover, in various situations. What if the system does not respond to your normal procedures?

• Examining your sources of applications and utilities, in light of expected problems (cost/performance again)

(1) Cost of failures

(2) Expertise (how to retain or keep good software people or suppliers)

(3) What have your colleagues done?

IV. Next stept?

• Your growth, and how it could affect software selection

• Impact of hardware changes on software sources

• Stability of the source (manufacturer, software house, etc.)

1974 COMPUTER CARAVAN SCHEDULE

Atlanta	February 26-28, 1974
Houston	March 5-7, 1974
Anaheim	March 20-22, 1974
San Francisco	March 26-28, 1974
St. Louis	April 3-5, 1974
Chicago	April 9-11, 1974
Cincinnati	April 16-18, 1974
New York	April 23-25, 1974
Boston	April 30–May 2, 1974
Washington, D.C.	May 7-9, 1974

Day 3: Small Systems Described by Users

(Continued from S/Page 2)

costs, etc)

• Vendor proposals (how you evaluated them)

• Procurement

(1) Problems unique to small businesses

(2) Financial peculiarities (contract flexibility, etc)

II. Operation

• Most common problems vs. chief advantages

(1) Who solves what kinds of problems, why?

(2) As a class, how does the equipment work

• New Applications

(1) Who develops, maintains

(2) Upgrades to larger configuration *vs* additional small systems

• Optional items

(1) Independent peripherals and supplies

(2) Independent software

(3) Vendor *vs* in-house training.

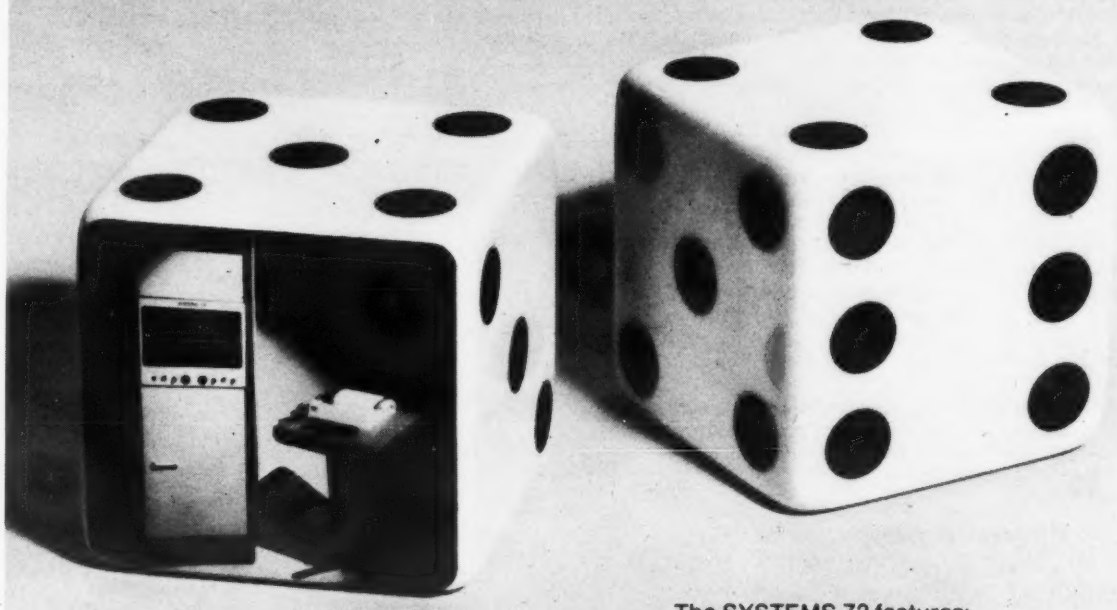
III. Review

• "What could we have changed, to make it better?"

• How does a small business look back on a computer procurement?

10% OFF THE PURCHASE PRICE* IF YOU CAN...

BEAT THE SYSTEMS



The SYSTEMS 72 computer, that is. It's programmed to shoot craps with you in our booth at the Computer Caravan, and the stakes are pretty impressive.

Like, 10% OFF THE PURCHASE PRICE OF A SYSTEMS 72 if you can run your winnings up to $1,500. We start you off with $500 "credit."

Just to keep our 72 from getting bored, we'll be running FORTRAN, BASIC, and batch on it at the same time it's shooting craps. That's only typical of the power and versatility of the 72, the first small virtual-memory computer. It combines the advanced problem-solving capabilities of much larger computers with the ease of operation and economy of minicomputers.

The SYSTEMS 72 features:
□ time-sharing □ virtual memory
□ reentrant FORTRAN/BASIC
□ multiprogramming □ all processors available to users console simultaneously.

So don't crap out. You've got plenty to gain for your company. And nothing to lose. Come on in and BEAT THE SYSTEMS.

If you can't make it to the show, write for our SYSTEMS 72 brochure, SYSTEMS Engineering Laboratories, 6901 W. Sunrise Boulevard, Fort Lauderdale, Florida 33313.

*Discount limited to one per company. Void where prohibited by law.

SYSTEMS
ENGINEERING LABORATORIES

Many Titles Suit DP Conferences

(Continued from S/Page 2)

who have invited people who they know might be interested in a certain facet of computer technology, or in certain products.

It is also a learning experience, not only in the regular Forum program, but also because of the special exhibitor seminars, where potential customers can learn about equipment capabilities and selection criteria.

So the Computer Caravan/73 is indeed many things to many people, but we don't have to stop there. Through your valuable feedback, either through Forum evaluation forms or face-to-face contact with us, we can plan the 1974 program to fill a broader spectrum of needs.

Exhibitor Listings

The following is an alphabetical listing of exhibitors in the 1973 Computer Caravan, and a brief description of the products and services to be displayed.

AMERICAN TELEPHONE & TELEGRAPH COMPANY
680 Fifth Avenue
New York, N.Y. 10019
Tel: (212) 393-2101

The visitor to the Computer Caravan/73 can see the highlights of the Bell System's approach to moving data. AT&T will feature the high-speed "dataphone 4800," first in a new family of data sets from the Bell System. The 4800 data set was designed for economical transmission at 4800 b.p.s over basic unconditioned private line facilities.

Also on display will be the Bell System's 85 A-1 Selective Calling System for polling applications. The system is a quiet, efficient way of information movement, generating management advice and systems reports in real time.

***

AMPEX COMPUTER PRODUCTS DIVISION
13031 W. Jefferson Blvd.
Marina del Rey, Calif. 90291
Tel: (213) 831-8933

Complete semiconductor, core, tape and disk system as plug-to-plug replacements for IBM 370 and 360 Computers, Univac 400 and 1100 computers and memories for DEC PDP-10 computers. Features will be the unique Ampex two-in-one TM-34 for 360 and 370 computers – two 3420 replacement tape drives in one cabinet that reduces space requirements by nearly 50%. The Ampex DS-330 disk subsystem, a plug-interchangeable replacement for either the 3330 or 3333.

Information will also be available on the complete line of Ampex mainframe memories for IBM 370/360, Univac, and DEC computers.

***

ANDERSON JACOBSON, INC.
1065 Morse Avenue
Sunnyvale, Calif. 94086
Tel: (408) 734-4030

Since its beginning in early 1967 as a manufacturer of one of the first acoustic data couplers, Anderson Jacobson, Inc. has continued to develop products for the data communications and computer terminals markets. At the present time the data communications products include a variety of 150 BAUD, 300 BAUD, 450 BAUD modems and acoustic couplers as well as a 1200 BAUD which is believed to be the only one of its kind in production today. These modems and couplers are available as stand alone units, as building blocks for a multiple modem system or as basic units for OEM applications.

The computer terminal line grew out of an early product wherein an acoustic coupler was designed to become an integral part of a teletype machine. This type of terminal with certain improvements and modifications is still in production today. In addition, an auto-answer version is the AJ841 which is based on a proprietary design that utilizes the heavy duty IBM Selectric mechanism as a printer. The third basic product of this line is a new model, the AJ630 which is a 30 character per second, non-impact printer terminal.

Anderson Jacobson maintains sales and service offices in principle cities throughout the country.

***

AUERBACH PUBLISHERS INC.
121 North Broad Street
Philadelphia, Pa. 19107
Tel: (215) 491-8212

AUERBACH Publishers is introducing its new DATA PROCESSING MANUAL during the Caravan with a special pre-publication subscription offer. This new service provides practical advice, techniques, checklists and other aids for helping DP managers solve their daily operating and managing problems. It comes in portfolio format for easy filing and reference. Also on display is the complete line of AUERBACH Computer Technology Reports, the encyclopedic standard reference for the EDP industry. These services provide all the facts, prices, performance data, configurations and technology background analysts need to make meaningful evaluations and selections of euqipment or services. Professional reference books in the fields of computer

Ampex gives you more than you asked for... again

Ampex' newest space saver...the 3420-compatible two-in-one tape subsystem for 360 and 370 computers

The biggest news since Ampex pioneered tape recording is the new two-in-one configuration for the Ampex TC-38/TM-34 tape subsystem. Now you can reduce the amount of space for tape drives and controllers in your DP center by nearly 50% ... or double the number of drives without allocating more space. You can get two high performance 3420-compatible tape drives with data rates to 200 KB, in a single cabinet only a little larger than one individually mounted tape drive. It's such a logical idea, it's amazing no one thought of it before.

But space reduction is only the beginning. The autothread on the TM-34 now is equipped with an exclusive "halo of air" that vastly improves threading without the reel-surround cartridge. The tape will literally thread itself from any position. Furthermore, the TM-34 has an automatic reel latch that forever eliminates manually operated locking levers or buttons. And, of course, this drive has a radial interface for operation with either the Ampex TC-38 or the IBM 3803 controller.

Format configurations include any combination of 9-track, single or dual density, and 7-track with data rates from 60 to 200 KB.

If you want extra value with every peripheral product, call your Ampex Computer Specialist today. He can solve your space and budget problems with disk drives and memory enhancements, too.

AMPEX

AMPEX COMPUTER PRODUCTS DIVISION
13031 West Jefferson Boulevard
Marina del Rey, Ca 90291, (213) 821-8933

People who really know computer tape know BASF Endura.

Airlines people. University professors. Insurance people. Engineers. International bankers. They're all buying BASF/Endura computer tape.

Frankly this new product has gained incredible acceptance.

We knew the world was ready for a tape that could meet future 3200/6400FCI expectations as well as today's...and Endura's success has proved we were right.

Of course everybody has their own reasons for buying Endura. Some like its durability. Others find it puts less wear and tear on their tape heads. Others are impressed with Endura's remarkably error-free performance—especially when they see the long term price savings.

All over the country, Endura's gaining acceptance with people who really *know* computer technology.

If you haven't already tried it, your BASF representative can give you some good reasons why you should. Talk to him. And get all the facts on our full line of magnetic media products.

BASF SYSTEMS
Division of BASF Wyandotte Corporation
Crosby Dr, Bedford, MA 01730.

BASF

BASF for people who really know.

science, data processing and management science are also on display and can be examined at your leisure.

***

BASF SYSTEMS
Crosby Drive
Bedford, Mass. 01730
Tel: (617) 271-4000

BASF Systems, the world's leading media supplier, will display its complete line of computer tapes, including the new BASF/endura, and the premium BASF/2000 A.D., as well as its full line of disk packs.

BASF's 2000 A.D. uses a new 'Hotter' oxide and a new thinner, harder coating for those applications requiring premium quality which exceeds industry standards.

BASF/endura offers computer users optimum prize/performance at low initial cost. Both tapes meet not only today's transport requirements, but future 3200 bpi – 6400 FCI expectations as well.

BASF disk packs are fully compatible with most major computer equipment.

On display will be the new 1236 (3336 compatible), the 1112 (200 tracks per inch 2316), the 'FLOPPY DISK,' and a full line of compatible disk packs.

***

BOEING COMPUTER SERVICES, INC.
P. O. Box 708
Dover, N.J. 07801
Tel: (201) 361-2121

BCS offers comprehensive support with product lines that include computer time, programming, consulting, training, data base services; applications that include general business and financial systems, scientific and engineering techniques, management and computer operating systems.

BCS operates from 24 sales offices located throughout the United States. Data Centers are maintained at Seattle, Philadelphia, Wichita, Huntsville and Washington, D.C. with over $100,000,000 worth of equipment on order to provide maximum computer flexibility.

***

CAMBRIDGE MEMORIES, INC.
969 Virginia Road
Concord, Mass. 01742
Tel: (617) 259-9880

Cambridge Memories, with headquarters in Concord, Mass. and plants in Newton, Mass. and Tijuana, Mexico is a full-line supplier of memory systems used as add-on or replacement main memories for IBM systems 360 Models 22, 30, 40, 50 and 65 as well as System 370 Models 155 and 165 computers and numerous minicomputers such as Digital Equipment's PDP-11 line and the Varian 620/i. It also manufacturers ferrite core, semi-conductor and moving magnetic domain (DOT) memory systems for use in computer processors, peripheral equipment and terminal devices.

CENTRONICS DATA COMPUTER CORPORATION
One Wall Street
Hudson, N.H. 03051
Tel: (603) 883-0111

The popular Centronics dot matrix serial impact printers feature speeds of 100 to 330 characters per second and 60 to 200 lines per minute. The recently introduced 80 column Model 306 printer, priced at $1,995, is one of the highlighted products. The low cost Centronics Model 401 CRT terminal, priced at $1,495, allows keyboard controlled data entry, editing and communications capabilities for system on-line and off-line operations. A wide variety of popular communications and computer interfaces are available to meet most system requirements.

***

CIG COMPUTER PRODUCTS, INC.
1351 Washington Blvd.
Stamford, Conn. 06902
Tel: (203) 359-2100

CIG Computer Products, Inc. markets and services computer products and systems throughout the world.

CIG 370 Package Leasing
– Flexibility
– Savings up to 60%
– Graduated growth with early terminal options CIG-Data Recall Mark II Memory
– Four component design
– Failsafe reliability
– IBM 370 Memory (Virtual Storage)
– IBM 360 (all models)
– UNIVAC CIG I/O Channels
– 360/370 Block Multiplexer Channel
– 360/370 Selector Channels
– 360/370 Multiplexer Channel
CIG Disk Subsystems CIG Tape Subsystems CIG/EDOS (Extended Disk Operating System)

***

CINCINNATI MILACRON, PROCESS CONTROLS DIVISION
Lebanon, Ohio 45036
Tel: (513) 494-5486

Cincinnati Milacron, manufacturer of reliable general-purpose minicomputers, wants you to "get it in writing." Tell us your applications and we will produce a proposal within minutes.

A CIP/2200 minicomputer based system displays all the relevant information on a CRT. You select the components needed, and the CIP minicomputer system automatically produces your proposal. See this unique system in operation and get full details on the economy and reliability of minicomputers from Cincinnati Milacron.

***

COMPUTER DEVICES, INC.
9 Ray Avenue
Burlington, Mass. 01803
Tel: (617) 273-1550

Computer Devices, Inc., a TechVan Corporate Partner, manufactures the TELETERM family of low-cost time-sharing terminals and printers.

TECHTRAN

#1 in reliable High Speed Cassette Communications Terminals!

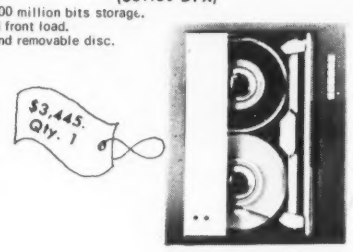
TECHTRAN INDUSTRIES

580 Jefferson Road, Rochester, N.Y. 14623 • (716) 271-7953
NEW YORK (203) 776-3816 CHICAGO (312) 671-3220
LOS ANGELES (714) 541-8518

Peripheral Shopping Center

MOVING HEAD DISC (Series DPX)
Up to 100 million bits storage.
Top and front load.
Fixed and removable disc.

FIXED HEAD DISC (Series DX)
Up to 16 million bits storage.
Non-contact heads.
Plug-in storage module.



TAPE TRANSPORT (Series 600)
25 through 75 ips in same package.
200, 556, 800, 1600 cpi and combinations.
Plug compatible with Pertec, Wang, Ampex.

SHOP ANYWHERE BUT BUY PER DATA

per data

102 New South Road • Hicksville, N.Y. 11801 • (516) 938-2851 • TWX 510/221-1881

All TELETERMS are rugged and dependable, utilizing a thermal (non-impact) printing technique for printing. Weighing only 22 pounds and fitting under an airline seat, the CDI 1030 TELETERM is being shown at the Computer Caravan in three exciting useful, NEW models:

CDI 1030 APL – the first portable terminal for the APL user. Available in ASCII code or EBCD as a direct replacement for the popular IBM 2741 APL device.

CDI 1030/MULTICS – the first portable with a MULTICS keyboard.

CDI 1030/ACT – for a time-sharing network. Communicates with other 1030's, TTY or time-sharing computers directly.

***

COMPUTER TRANSCEIVER SYSTEM INC.
66 Midland Avenue
Paramus, N.J. 07652
Tel: (201) 261-2800

Manufacturers of EXECUPORT® high speed data terminals for remote data collection & Transmission. CTSI will demonstrate their portable, quiet 310 series; the new model 1200 with speeds to 120 CPS; the new model 625 Paper Tape Punch & Reader; and the new 420 magnetic tape memory unit for off-line collection/storage/transmission of data through cassette recording. The equipment is characterized by extreme reliability: MTBF = less than one service call per year.

***

CULLINANE CORPORATION
One Boston Place
Boston, Mass. 02108
Tel: (617) 742-8656

Cullinane Corporation will feature at The Computer Caravan its proprietary software products including those for use with data base management systems. These products are CULPRIT, IMS/CULPRIT, TOTAL/CULPRIT, RDMS/CULPRIT and user department versions including EDP-AUDITOR, PERSONNEL-EDP-REPORTER, MARKET-EDP-ANALYZER, PORTFOLIO-EDP-REPORTER and PAYOUT. In addition, a seminar on the EDP-AUDITOR/CULPRIT Systems will be held from 4 to 5 PM on the second day of each show. Participants in the seminars will be able to attend the Computer Caravan free of charge as guests of the Cullinane Corporation.

Those wishing additional information may contact the Cullinane Corporation at its booth at The Computer Caravan or calling (617) 742-8656.

***

DATA DISC, INC.
686 W. Maude Avenue
Sunnyvale, Calif. 94086
(408) 732-7330

Data Disc, Inc. will exhibit its ANAGRAPH Display System. IBM 360/370 users will see an operational system which not only offers IBM 2260 emulation but also provides truly versatile graphic display capability. OEM's will be able to see Data Disc products at work in an operating system.

ANAGRAPH provides up to 32 users with low cost TV terminals. Image storage and refresh is independent of the CPU. ANAGRAPH employs a minicomputer, TV terminals, keyboards, a Data Disc head per track disc memory, a Data Disc graphic display system and a Bright Industries IBM compatible magnetic tape drive to provide a cost effective system with grow power!

***

DATA GENERAL CORPORATION
Route 9
Southboro, Mass. 01772
Tel: (617) 485-9100

Minicomputers, peripherals, and software. (Full listing on Page S/16.)

DATAPRO RESEARCH CORP.
One Corporate Center
Route 38
Moorestown, N.J. 08057
Tel: (609) 234-4300

Datapro Research Corporation is displaying DATAPRO 70, the most widely used data processing reference service in the world. DATAPRO 70 is unique among reference services in that it provides monthly updated product reports on all important EDP hardware and software products – in one convenient three-volume set. DATAPRO 70 provides fast reports on new products to keep you up to date, plus in-depth product analyses to help you in planning EDP systems and selecting equipment. The DATAPRO 70 service also includes personalized consulting by telephone, and NEWSCOM, a monthly newsletter on significant product trends and developments.

DATA PRODUCTS CORPORATION
6219 DeSoto Avenue
Woodland Hills, Calif 91304
Tel: (213) 887-8000

LINE PRINTERS

– Medium to high speed impact printers: for OEM systems ranging from low cost minicomputers and terminals to high speed EDP systems.

– Satellite Printers: for economical off line printing. CORE MEMORY PRODUCTS.

– Memory Systems: a complete line for applications ranging from mainframe to bulk storage in commercial and military systems. Also, plug compatible replacement memories.

– Stacks: customized to your needs.

– Cores: sizes from 14- to 30-mil.

COMPUTERIZED DISTRIBUTION

If you have any questions about data communication...

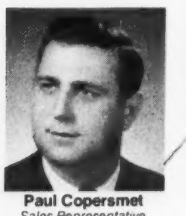
Don't ask me!

Bring your questions to the Computer Caravan and ask these fellows in the ICC booth.


Matt Kenny
V.P.-Sales


Jon Blasdell
National Accts. Sales Mgr.


John Roush
Central Reg. Accts. Executive


Paul Copersmet
Sales Representative


Smiley Hinton
Central Reg. Sales Mgr.


Quentin Nesbitt
Sales Representative


Dave Daubenmire
Sales Representative

ICC

International Communications Corporation
7620 N.W. 36th Avenue, Miami, Florida 33147
Telephone 305 + 691-1220 305 + 836-4550
In Europe: RACAL-MILGO LIMITED Reading, Berks, England

a milgo company

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MANAGEMENT SYSTEMS
– CODONS's: dedicated system that slashes distribution cost COMMUNICATIONS
– DataPak-Multiplexing Systems: for reducing data transmission costs.
– DETECT test set, for quickly locating network failures.

***

DECISION
5601 College Avenue
Oakland, Calif. 94618
Tel: (415) 654-8626

Decision will be showing three newly announced products and systems: the Data General NOVA compatible line of peripheral controllers, systems, a new real-time operating system, and innovative Optical Page Reader and DECISION's Optical Data Entry System.

The Model 3170 controller plugs into the NOVA line providing a minimum of 11.6 megabytes of storage from a Diablo, Caelus or Wangco 5440 top loading cartridge disk drive. Another featured peripheral is the Model 3180 phase encoded 1600 bpi tape drive controller.

A key product introduction is the DINOS family of NOVA operating systems. DINOS I, II and III are high performance, low-cost and more useful answers to Data General's RDOS.

Decision's Model OMR 6500 Optical Reader involves a new concept which scans a fixed page in contrast to the conventional approach of moving the page across the scanning device. The result is greater throughput with minimum opportunity for error. The OMR 6500 has many options, broad flexibility of input data forms and inherent design simplicity that maximizes ease of maintenance.

Decision's Optical Data Entry System evolves around the Model OMR 6500 and provides users with the first proven computer base Optical Data Entry System.

***

DELTA DATA SYSTEMS CORPORATION
Woodhaven Industrial Park
Cornwell Heights, Pa. 19020
Tel: (215) 639-9400

DELTA will exhibit a typical video display terminal system which includes a terminal with special function keyboard, a cassete recorder, and a line printer. The company will also show its DELTA 5000 video display terminal and Multi-Term programmable terminal multiplexer. These and other DELTA products offer unique features such as special character generators, upper/lower case, PAGING, built-in interfaces for computer/terminal compatibility, 3000-character memory, and others, all designed to solve difficult terminal system problems.

***

EASTMAN KODAK COMPANY
Business Systems Markets Division
343 State Street
Rochester, N.Y. 14650
Tel: (716) 724-4745

Eastman Kodak will show how KODAK KOM Microfilmers contribute to Computer Output Management. Various pieces of microfilm retrieval hardware, including the KODAK EKTALITE Reader, will be featured. Microfilm systems specialists will be available to discuss your computer output requirements and to show how computer output microfilm can provide added output flexibility to your DP shop.

***

ELECTRONIC MEMORIES & MAGNETICS
12621 Chardon
Hawthorne, Calif. 90250
Tel: (213) 644-9881

EMM MICROMEMORY Processor Storage Systems
Interfaces with System/360 and System/370 computers. Storage capacity: 16,384 to 3,145,728 bytes. Cycle time: 750 nanoseconds to 2.5 microseconds. Large card design for easy maintenance. Permits model and capacity changes in the field. Internal power module protects stored data in case of power failure.
CAELUS DISK MEDIA
CMCX DISK PACK for System/370
CMIII DISK CARTRIDGE for System/3
CMI DISK CARTRIDGE for new low cost systems
PGI 844 UNIVERSAL CONTROLLER AND DISK SYSTEM
Interfaces with System/360 and System/370 computers. Handles intermixed track densities and variety of I/O devices. Controller MTBF of 10,000 hours. 10% as large as 2314 controller. Interchangeable plug-in cards simplify maintenance. Test mode option permits off-line media verification.

***

ENTREX, INC.
168 Middlesex Tpke.
Burlington, Mass. 01803
Tel: (617) 273-0480

ENTREX, INC. the leading manufacturer of Key-to-Disk data entry equipment including a preview of new, improved software. ENTREX will demonstrate the system's extensive editing capabilities and validity checks, including crossfooting and subtotaling.

A highlight of the ENTREX Exhibit is the introduction of the new System 280, a low cost key-to-disk

13 reasons why you should go to the Computer Caravan.

iomec inc Model 2560 Reader
New high-speed reader – first 1,000 cps reader at less than $1,000.

iomec inc Iodisc Drive Model 3404
New iodisc Series 3000 top-loading disc drive – 200 tracks/inch using IBM-type 5440 cartridge. 60 msec average access time and 96 million bit capacity. Light weight and small enough to easily fit 24-inch deep standard rack.

iomec inc Model 40 Portaverter
New Portable Numeric Data Entry System for inventory accounting, order entry, stock replenishment and financial transactions. Completely self-contained with magnetic cartridge data storage.

iomec inc Model 7470 Punch/Reader
New punch/reader combination with speeds up to 70 cps punch and 400 cps read. Easy loading and chad removal with no need to slide unit out from panel.

iomec inc Iodisc Drive Model 31
New iodisc Series One includes fixed and removable disc for combination of inexpensive removable media system with mass storage add-on capability.

iomec inc Model 202 Printer
New line printer – varied font sets and multi-font buffer automatically adjust to speeds of 142, 202, 256 and 526 lines per minute. Highest quality printing on 6-part – or more – forms.

iomec inc Model 2016 Reader
New low-cost reader – 150 cps asynchronous. Lensless optical system. Single moving part.

iomec inc Model 4040 Reader/Handler
New reader/handler combination – field-proven 2540 in one integrated unit with servo-controlled handler. Electrical noise has been eliminated.

iomec inc Iotape Controller Model 9100
New plug-in Controller for low-cost Series Ten magnetic tape transport handles both 800 cpi NRZI and 1600 cpi formatters at the same time. Each formatter controls up to 4 tape drives.

iomec inc Model 170 Punch
New 70 cps punch–motor driven interposer for positive perforating. Echo read-after-write check-back optional. Easy front panel loading. Adjusts to paper width automatically.

iomec inc Iotape Controller Model 101
New Series Three Controller card mounted Cartritape drive for plug-in directly inside your minicomputer. Provides extremely large capacity, slow-speed ROM. Ideal compact program loader.

iomec inc Iotape Transport Model 313
New iotape Series Three triple (Model 313), dual (Model 312) and single (Model 311) Cartritape drive packs. Large capacity magnetic tape cartridge for reel-to-reel performance.

iomec inc Model 2032 Reader
New medium-speed reader – single moving part, 300 cps asynchronous and 400 cps synchronous. Lensless optical system.

The new iomates. See them all in
Anaheim–Mar. 27-29. San Francisco–Apr. 3-5.
Kansas City–Apr. 11-13. Chicago–Apr. 17-19. Cleveland–Apr. 24-26.

Our systems are going to town.

It's time for another dynamic Caravan showing. This year, we're featuring a multi-terminal, on-line data entry system in a multi-task environment. The extremely flexible, 630 nsec, multi-bus V 73 is on your track. Commanding an order entry program running under our VORTEX operating executive with print-out in hard copy on our super-versatile STATOS 31® printer/plotter. And just about every bell and whistle of modern technology. A total systems capability that solves a broad range of complex systems applications problems. Faster. And with more efficiency and flexibility than anything else you'll see around.

V73 with VORTEX

You'll view a real-time operating system at its best. CRT's operating independently of each other simultaneously, show the multi-tasking capability with foreground tasks in a real-time environment. Note that VORTEX has automatic checkpoint/restart and dynamic memory allocation for most efficient usage. After you've seen the flexibility of VORTEX in action and our new V73 doing its fast and powerful stuff, you'll wonder why it doesn't cost more. Especially when you consider its multiple path interfacing between processors and memories and I/O's.

STATOS

Here's where you'll get your hands on the results of your order entry program. You'll see the immediate output from two or more tasks—each of which outputs data direct to the STATOS 31. Fast. A capability of printing upper and lower case characters at up to 1,000 lines per minute. With definition that really pops right out at you. Without degrading the performance of the overall system. Let your imagination run wild. Enter any order you can think of in any quantity for up to ten different items. When you finish placing your order, you'll see an instant print-out on the STATOS 31 printer/plotter—complete even to the shipping label.

ADAPTS

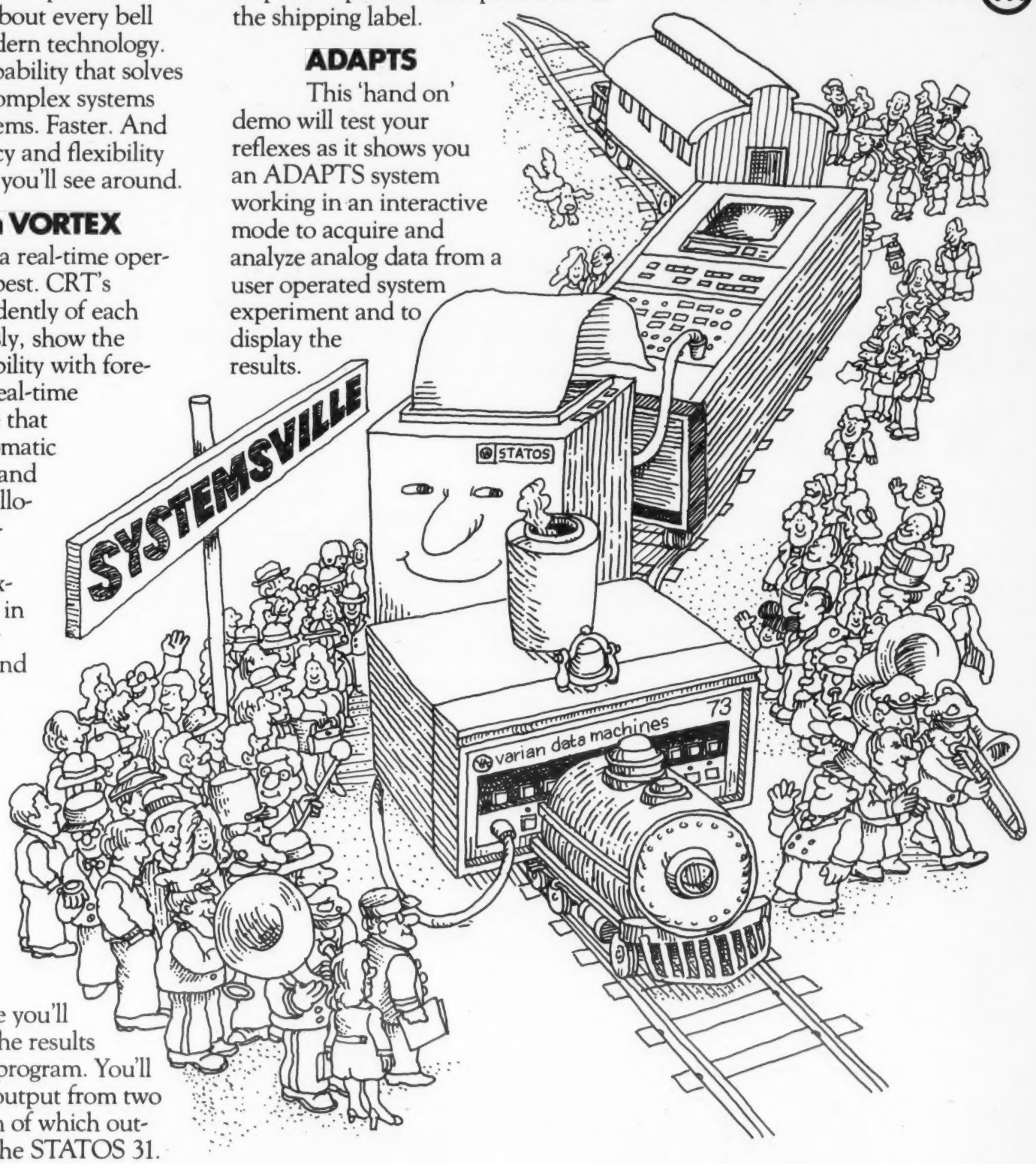
This 'hand on' demo will test your reflexes as it shows you an ADAPTS system working in an interactive mode to acquire and analyze analog data from a user operated system experiment and to display the results.

Bells, lights and buzzers will test your reflexes and stimulate your thinking about our systems capabilities.

Get into our system. Go to town with us.

Varian Data Machines,
2722 Michelson Drive, Irvine,
California 92664 (714) 833-2400

varian data machines



system for the user of less than ten keypunches. System 280 offers most of the features of the larger System 480, plus a unique communications option.

***

GENERAL COMPUTER SYSTEMS, INC.
P.O. Box 6251
Dallas, Texas 75222
Tel: (214) 242-8411

The GCS 2100 multimedia data entry system provides Interactive Data Editing At Source *(IDEAS®)*.

Featured with GCS 2100 will be turnaround document processing and work processing.

THREE YPES OF INPUT will be demonstrated: punched cards, the standard 029 keyboard for data entry, and the typewriter keyboard for word processing.

FOUR TYPES OF OUTPUT will also be operational: magnetic tape, teletype, sixty line per minute supervisor station, & high speed printer for letter writing.

The GCS 2100 with 29 million characters of data storage, provides CRT formatting with GCS's unique *PROMPTING®* for both data entry and word processing.

. . . the data editing company with *IDEAS®*.

***

HAZELTINE CORPORATION
Pulaski Road
Greenlawn, N.Y. 11740
Tel: (516) 549-8800

Hazeltine Corporation, Greelawn, New York, will exhibit the Hazeltine 2000 teletype compatible video display terminal, dual magnetic tape cassette unit and hard copy printer. The Hazeltine 2000 is used either as a stand alone remote terminal which can operate at variable speeds up to 9600 BPS, or as an off-line data entry device in conjunction with the magnetic tape cassette unit. Several editing features as well as dual intensity video for protected format display provide a powerful system for data preparation, entry and retrieval.

***

HEWLETT-PACKARD COMPANY
11000 Wolfe Road
Cupertino, Calif. 95014
Tel: (408) 257-7000

Hewlett-Packard's display includes the remarkable new HP-80 shirt-pocket calculator. Brother to the very successful, engineering-oriented HP-35 calculator, the HP-80 is designed to serve the needs of the business and financial community.

A demonstration of low-cost batch processing with HP's thoroughly modern mini is one of the features of the 2120 DOS-M system, while multiprogramming capability is documented in a variety of commercial, scientific and engineering appliations.

OEM product displays include the micro-programmable HP 2100 minicomputer, HP-7900 moving-head discs and 7970 digital magnetic tape units.

***

INCOTERM CORPORATION
6 Strathmore Road
Natick, Mass. 01760
Tel: (617) 655-6100

INCOTERM Corporation is displaying its new low-cost SPD 900 series Remote Batch Terminals. The series 900 offers compatibility with IBM 2780 and 3780, Univac 1004, CDC User 200, 360/20 HASP and ICL 7020.

The key element of the series 900 is the famous INCOTERM 10/20 Stored Program Display and electronic keyboard. Three models offer a choice of line printers from 200 to 400 lines per minute and card readers from 150 to 300 cards per minute.

***

INFOREX, INC.
21 North Avenue
Burlington, Mass. 01803
Tel: (617) 272-6470

INFOREX will exhibit its 1302 Intelligent Key Entry System and highlight its new KeyScan and In-Line Data Entry Systems. The 1302 Intelligent Key Entry System features all keypunch, key-verify, and key-to-tape functions as standard, plus many new key-to-disc capabilities in a system with proven performance and reliability. KeyScan, for the processing of turnaround documents and check remittances, offers a unique combination of OCR, Automatic Check Processing and operator keyboard intervention within an integrated system designed to reduce the number of steps and personnel, thereby lowering the cost per document processed. The new In-Line Data Entry System is designed to meet the users' specific data preparation needs by offering a wide array of editing checks assuring immediate error detection and correction. These range from simple table look-ups to field, record, document and group integrity tests.

***

INFOTRON SYSTEMS CORPORATION
7300 N. Crescent Blvd.
Pennsauken, N.J. 08110
Tel: (609) 665-3864

Infotron Systems Corporation will exhibit their latest time division multiplexer (TDM) and front end equipments, the Timeline 240 and Timeline 450.

The Timeline 240, an ultra reliable TDM, accomodates all available terminal types, codes and speeds – both asynchronous and synchronous – from 37.5 to 4800

If you write application software, we can match it with systems.

Why stop at selling or leasing software systems to end users? Now you can offer them complete minicomputer package systems.

This way they'll be able to get everything they need from you. And you'll be able to get everything you need from us.

Wider choice of peripherals We offer a full line of peripherals to go with our SUE and MAC minicomputers: IBM compatible 5440 disks, CRT/keyboards, printers from 100 cps to 600 lpm, magnetic tapes, cassettes, punched card devices and paper tapes. Anything your customer needs. And when his needs change, so can the system. Easily. Even by factors of 2 or 3.

Complete software tools To make your programming burden lighter we offer a full set of software tools: Fortran, assemblers, utilities, RTOS, sort/merge, DOS and RPG/SUE. That last item is 98% compatible with RPG II by the way.

And we're the only company we know of that unconditionally warrants all our software for a full year.

Maintenance too We'll handle any and all problems your customers might have, promptly and expertly, anywhere. (We recently solved a problem in Bangkok, for instance.) And we'll do it by contract or on call, either way you want it.

We also offer training classes in maintenance as well as in programming.

Add it up So what you'll have is a more salable package to offer an end user. Everything he'll ever want or need in a minicomputer system, right down to the enclosures. (Which we'll put your name on, if you wish.)

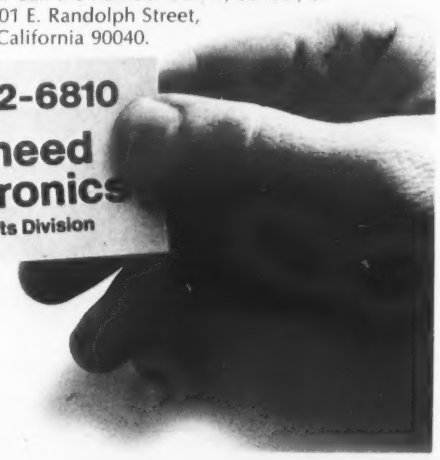
Everything ready and working from the minute it's wheeled in his door. YOUR NAME

And you'll be dealing with an established, reputable company. One that will be there when you need us.

Let's talk. Call the number below, collect, or write us at 6201 E. Randolph Street, Los Angeles, California 90040.

213/722-6810

Lockheed Electronics
Data Products Division



Call us.

Boston 861-1880 • New York metro (201) 947-8107 • Philadelphia 825-2880
Washington (703) 525-3600 • Atlanta 266-0730 • Detroit 577-5037 • Chicago 833-4600
Dallas 231-6163 • Houston 682-2617 • San Francisco (408) 257-3357

baud. Features include critical component redundancy, full system diagnostics, automatic baud rate detection, dynamic overspeed protection.

The Timeline 450 Port Selector extends a computer's traffic handling capability. Front end ports are assigned to communications channels on a hynamic rather than dedicated basis, allowing fewer ports to service more lines. Maximum capacity is 254 lines by 124 ports.

***

INTERDATA, INC.
2 Crescent Place
Oceanport, N.J. 07757
Tel: (201) 229-4040

Interdata will display several members of its New Series of minicomputers. This upward compatible family of processors covers the complete range of the price/performance spectrum. Members of the family include: the Models 70, 74 and 80 for general purpose use and the Models 50 and 55 for Data Communications. Interdata will also display its full range of software Operating Systems: a Real Time Telecommunications Operating System, a Real Time Operating System, a Basic Operating System and a Disc Operating System. Each afternoon during the show, Interdata will present a meaningful seminar on either "Microprogramming," "Data Communications," or "Operating Systems Software."

***

INTERNATIONAL COMMUNICATIONS CORPORATION
A Milgo Company
7620 N.W. 36th Avenue
Miami, Fla. 33147
Tel: (305) 691-1220

ICC/MILGO will display a complete line of data communication products, featuring high-speed modems for data transmission over dial-up phone lines or leased data lines. Modems from ICC operate at data rates from 2400 bits-per-second to 9600 bits-per-second. The ICC display will also include data communication test equipment and accessories. Experienced personnel will be in attendance for consultation.

***

IOMEC INC.
Route 9
Southboro, Mass. 01772
Tel: (617) 481-2500

IOMEC, one of the largest independent OEM suppliers of minicomputer peripherals and data entry terminal equipment announces 13 new product additions at the 1973 Computer Caravan.

The new products include:

– Five brand new paper tape products – featuring the first 1000 cps reader for less than $1000 and the 70 cps punch/400 cps reader combination.

– An entirely new series of disc drives including new mass storage (36 megabits) add-on dsic memory for the Series One "floppy" disc system.

– Plus Model 200 multi-font buffer line printer; varied packages of the IOTAPE Series Three minicartridge deck and the Series Ten large tape transports.

– One of the most advanced portable data entry equipment systems in the market today. The system uses micro-logic circuits to provide an extensive range of features at the lowest price.

***

ITT DATA EQUIPMENT & SYSTEMS DIVISION
East Union Avenue
East Rutherford, N.J. 07073
Tel: (201) 935-3900

The ITT 3501 Asciscope is a low-cost, TTY compatible CRT display terminal complete with keyboard, acoustic coupler, integral modem, buffer, and printer interface – no extra costs. The Asciscope can communicate terminal-to-computer or terminal-to-terminal. It features interfaces for a Data Access Arrangement when using its integral 300 bps modem, for external modems of 1200 or 2400 bits per second, and for printers operating up to 120 characters per second. The Asciscope leases for $65.00 a month, including maintenance. Nationwide installation and service by ITT includes on-the-spot exchange if a leased unit should ever require service.

***

LOCKHEED ELECTRONICS COMPANY, INC.
Data Products Division
6201 E. Randolph St.
Los Angeles, Calif. 90040
Tel: (213) 722-6810

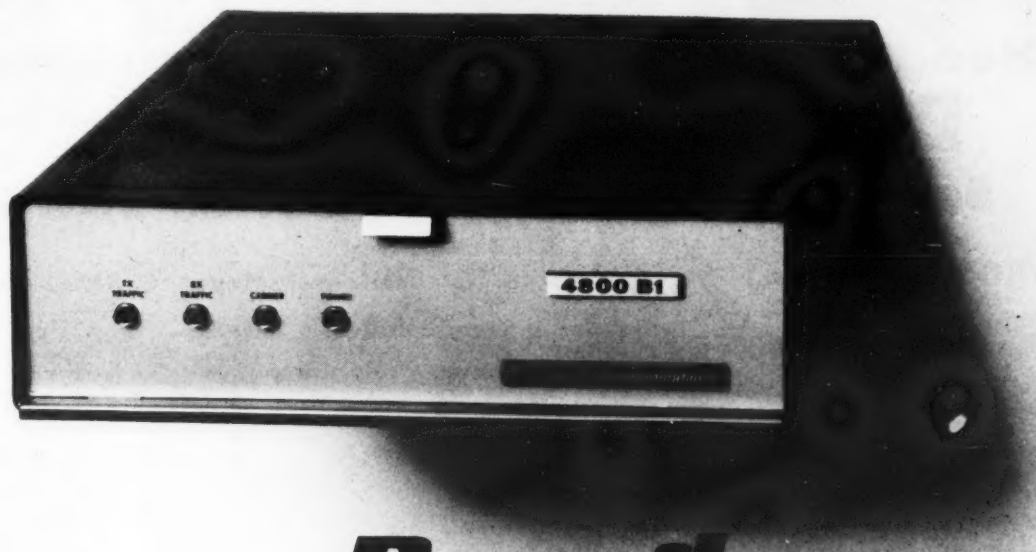
The SUE minicomputer data processing system for small business applications will be demonstrated by the Data Products Division. System flexibility provides for memory expansion to 64K bytes, up to four 5440 type disk drives, high performance printers, magnetic tape, and card equipment. Comparable to IBM System 3/model 6, the CRT oriented SUE system is of particular interest to application software organizations who wish to market a turnkey total package for small business applications. Manufacturer supplied software includes RPG II, a disk operating system, and sort/merge, as well as assemblers and utilities.

Also displayed are memory modules of the MM-365, a replacement memory for the IBM 360 model 65 and up.

***

Penril is not the largest manufacturer of high speed modems in the world.

But we will be.



Penril
Data Communications, Inc.
5520 Randolph Road
Rockville, Maryland 20852
301/881-8151

Regional offices:
Atlanta, Boston, Chicago, Houston, Los Angeles and New York

Penril's 4800B-1 modem pictured above has been selected by the U.S. Internal Revenue Service for use in its nationwide data communications network.

MODULAR COMPUTER SYSTEMS, INC.
1650 West McNab Road
Ft. Lauderdale, Fla. 33309
Tel: (305) 974-1380

The MODCOMP MAX III real-time multiprogramming operating system will be demonstrated. Foreground tasks will be initiated and executed. Assemblies and FORTRAN compilations will be performed as background operations. A MODCOMP II/25 computer with 32K words of 16-bit, 800 nanosecond memory will be used for the demonstrations. System peripherals will consist of disc, card reader, two CRT's, paper tape reader, and keyboard/printer. Analog, digital and communications interfaces will also be displayed.

While at the MODCOMP booth, guests may register to win a MODCOMP II computer with 16K words of memory. This computer will be awarded at the end of the Caravan's ten-city tour.

***

PARADYNE CORPORATION
8550 Ulmerton Road
Largo, Fla.
Tel: (301) 654-0033

Paradyne Corporation will display: The BISYNC-48 super modem featuring the highest throughput available on dial-up lines – plus, guaranteed error-free transmission; our 4800 bps, automatically-equalized M-48 modem with really usable self-test features; the BISYNC Analyzer – the unique test instrument that provides immediate fault isolation in BSC communications links; and the revolutionary remote I/O and computing systems that eliminates conventional communications hardware, terminals, modems and software – Paradyne's astonishing PIX.

Sales and Services offices in Largo, Florida (headquarters); and San Francisco; Los Angeles; Atlanta; Chicago; Boston; Detroit; St. Louis; New York City; and San Antonio.

***

PENRIL DATA COMMUNICATIONS, INC.
5520 Randolph Road
Rockville, Md. 20852
Tel: (301) 881-8151

A complete line of data modems operating from 300 bps to 4800 bps for leased line and DDD data transmission. End user, OEM and custom designed configurations will be displayed. Also, specially designed telephone line test and analyzing equipment will be demonstrated.

PER DATA CORPORATION
102 New South Road
Hicksville, N.Y. 11801
Tel: (516) 938-2851

Digital Tape Transport –
7 or 9 track; read after right or read only, 25 to 75 IPS. 200, 556, 800 & 1600 CPI densities. IBM compatible. Fixed head disk drive fast head per track random access storage. Storage capacities up to 1 million 16 bit words. Average access time - 8.5 ms. Non-contact head loading.

Moving Head Disk Drive – Front load or top load. Storage capacity up to 100 million bits at density of 200 track. Access time – 38 ms.

Controllers & Formatters – for tape transport, moving head disk, fixed head disk and printer. Fully self contained including power supply and cabling.

***

PRIME COMPUTER, INC.
17 Strathmore Road
Natick, Mass. 01760
Tel: (617) 655-6999

The Computer Caravan is PRIME Computer's first major public demonstration of its recently announced PRIME 200 small computer. Featuring a unique (software first) design – all systems software was completely specified before the computer's hardware was designed – the system will be used to demonstrate an extremely powerful disc operating system. PRIME's DOS-200 features extensive file management resources, batch processing system, numerous disc file access discipline, and file system common to all PRIME software.

***

SANDERS DATA SYSTEMS
Daniel Webster Highway
Nashua, N.H. 03068
Tel: (603) 885-4211

Sanders to feature intelligent terminal system with disk during Caravan.

Sanders Data Systems, Inc. will exhibit and demonstrate both their 804 stand alone and 810 cluster display terminal systems using standard software packages for order processing, billing, inventory control, data entry, remote job entry, and other business applications during the Computer Caravan.

The 810 system features a disk memory which can provide up to 5 million bytes of storage, while the 804 system interfaces a tape cassette transport for applications needing smaller storage capabilities. Both systems will be seen in operation with 32 character per second and 200 line per minute printers, and a card reader.

***

SIERRA RESEARCH CORPORATION
47 Middlesex Tpke.
Burlington, Mass. 01803
Tel: (617) 273-0900

Vermont Research

Bits or Bytes for minimum Bucks

Whether it is disc or drum – whether it is head per track or moving head – whether it is digital interface or complete memory system, you should call us at Vermont Research to review your requirements for rotating memories.

Head Per Track Drums Series 3000

VRC Model	Million Bits	OEM Quan Price
3002-32	2	$ 3150
3002-64	4	$ 3500
3002-128	8	$ 4620
3016-128	8	$ 4865
3016-256	16	$ 8365
3016-384	24	$11165
3016-512	32	$13265

Moving Head Disks Series 5000

VRC Model	Mega Bytes	OEM Quan Price
5016	40	$ 5400
5018	62	$ 6300

Vermont Research Corporation
Precision Park
North Springfield
Vermont 05150
Telephone: 802-886-2256
Telex: 710-363-6533

VRC Inc.
5261 West Imperial Hwy
Los Angeles
California 90045
Telephone: 213-641-7100

Vermont Research Limited
Cleeve Road
Leatherhead
Surrey
Tel: Leatherhead 74758
Telex: 23280

It's time your computer got its hands dirty. Sierra Research Data Systems Division will demonstrate the capabilities of the SDA-770 Data Collection System to collect, inquire, retrieve and display manufacturing data. Typical inventory, material flow and labor distribution control programs will be demonstrated with the Sierra Operating System and FDC (Factory Data Collection) programs. Remote data collection will be demonstrated twice daily via on-line communications between a real-time SDA-701 Remote Terminal and SDA-710 Attendance Station at the Computer Caravan and a Sierra SDA-770 Central Controller at our plant in Boston, Massachusetts.

***

SYCOR, INC.
100 Phoenix Drive
Ann Arbor, Mich. 48104
Tel' (313) 971-0900

Sycor will exhibit its popular Model 340 Intelligent Communications Terminal in two configurations – branch office order entry and remote job entry. The branch office terminal will demonstrate Sycor's unique dual communications feature – low speed (110-300 baud) asynchronous communications compatible with major time sharing systems and high speed (1200-4800 baud) binary synchronous communications. The remote job entry configuration features a 200 lpm printer, a 250 cpm card reader, and is compatible with computers operating under HASP or ASP control. Both configurations are user programmable with Sycor's T.A.L. (Terminal Applications Language).

***

SYSTEMS ENGINEERING LABORATORIES, INC.
6901 West Sunrise Blvd.
Ft. Lauderdale, Fla. 33313
Tel: (305) 587-2900, ext. 544

Systems Engineering Laboratories will display the power and versatility of their SYSTEMS 72 computer. It will be running FORTRAN, BASIC and Batch at the same time it is shooting craps with booth visitors.

- SYSTEMS 72, the first small, virtual-memory computer, combines the advanced problem-solving capabilities of much larger computers with the easy operation and economy of minicomputers.

It features: time-sharing - virtual memory - reentrant FORTRAN/BASIC - multiprogramming - all processors available to users console simultaneously.

- SYSTEMS will also show a film on EDITS (Engineering Documentation Interactive Terminal System), a new system for faster, more economical preparation of engineering drawings.

***

TALLY CORPORATION
8301 South 180th Street
Kent, Washington 98031
Tel: (206) 251-5500

Tally Corporation will feature the Datascribe – the total data entry, communication print out system plus the new Tally line printer – the most cost effective choice for intermediate speed printing applications.

The Datascribe Communicator with its unique data compression feature eliminates transmittal of redundant information which reduces telephone line time up to two-thirds. Transmission speeds range from 80 to 420 records-minute depending on the modem used and the amount of data compression available.

Data on magnetic tape can be printed at up to 200 lines per minute on the new Tally printer. The patterned CROSS-POINT® printing technique results in unpresidented reliability and consistent high quality multiple copy at low cost per page.

TECHTRAN INDUSTRIES, INC.
580 Jefferson Road
Rochester, N.Y. 14623
Tel: (716) 271-7953

Cássette Communications Terminals, EIA RS232 and TTY Compatible featuring single and dual decks, switch selectable speeds to 2400 baud, High Speed Search, FULL Remote Control, Data Edit, Switch Selectable On-line/Off-line operation; models for both ASCII and IBM 2741 operations.

***

TEKTRONIX, INC.
P. O. Box 500
Beaverton, Ore. 97005
Tel: (503) 644-0161

Tektronix shows new APL graphic terminal.

The 4013, Tektronix's new APL terminal will be shown at the Computer Caravan. The company will also show the 4912 Digital Cassette Tape Unit and 4610 Hard Copy Unit. APL provides an extremely flexible language for computer graphics. Tektronix has implemented a group of functions to exploit the advantages of APL as a programming language for graphics.

The 4013 is a member of the 4010 family of computer display terminals. Pricing and delivery information is available at the booth.

***

TELETYPE CORPORATION
5555 Touhy Avenue
Skokie, Ill. 60076
Tel: (312) 982-3134

Teletype Corporation is exhibiting their model 38 wide platen terminal

When you visit

the MODCOMP exhibit, you can register to win a MODCOMP II computer with 16K words of 800 nanosecond memory. Contest rules and entry blanks are available at the MODCOMP booth.

While visiting us, you will see a MODCOMP II system with disc, CRT's and other peripherals operating under our MAX III Real-Time Executive. Real-time tasks will be scheduled, initiated and executed while FORTRAN compilations and assemblies are performed at a checkpointable, lower priority level in the background.

Come see a *real* real-time executive in action at the MODCOMP booth!

Meet the MODCOMP Computer Family

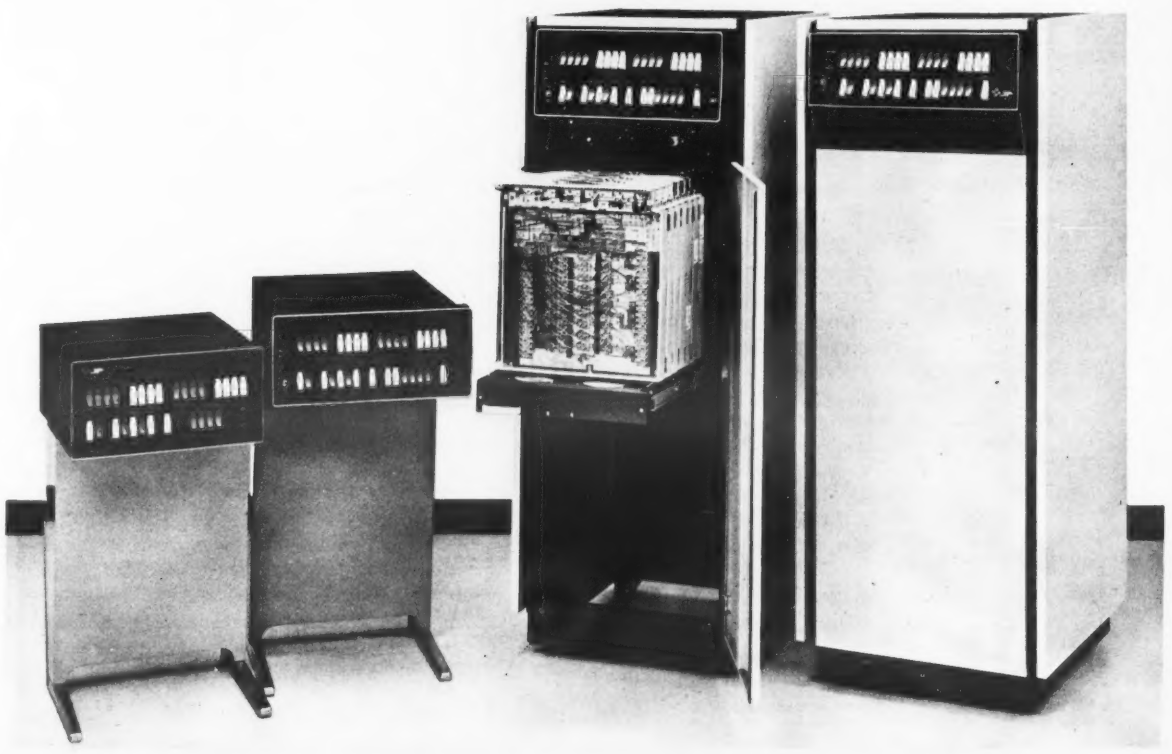
at the Caravan

See one...
Run one...
Buy one...

WIN ONE!

modular computer systems

1650 W. McNab Road
Fort Lauderdale, Florida 33309
Phone (305) 974-1380



and the Teletype® 4210 magnetic tape data terminal featuring the automatic rewind and local printout option. When combined as a remote-computing terminal arrangement, you transmit and receive online at speeds up to 240 characters per second, and then print out data at lower local speeds, all on an unattended basis. The model 38 terminal prints a full 132 character line at 10 characters per inch in upper and lower case, and accepts standard 14-7/8" fan-fold paper. Total price for both terminals is less than $4,000.

***

TEXAS INSTRUMENTS INC.
P. O. Box 1444
Houston, Texas 77001
Tel: (713) 494-5115, Ext. 2165

"Silent 700*" Electronic Data Terminals and minicomputers will be demonstrated and displayed by TI personnel. The new, low-cost "Silent 700" ASR teletypewriter with twin magnetic tape cassettes will be demonstrated, as will the popular Model 725 Portable Data Terminal. Two 16-bit minicomputers will be on display; the Model 960A "Bit-Pusher*" computer, and the Model 980A high-performance general purpose computer. Both computers have fast semiconductor memory and many standard and built-in features for more cost-effective computer applications.

*Trademarks of Texas Instruments Inc.

***

VARIAN DATA MACHINES
2722 Michelson Drive
Irvine, Calif. 92664
Tel: (714) 833-2400

Varian Data Machines demonstrates broad systems capability along with some new products. ADAPTS, Varian's laboratory automation system built around Extended BASIC, will be demonstrated on a 620/L-100 computer. Also on display are VDM's new V73 medium-scale computer and the STATOS 31 electrostatic printer/plotter. These items along with other peripherals, are tied together in one system under control of the VORTEX real-time operating system software. Both laboratory and business-oriented applications will be demonstrated.

***

VERMONT RESEARCH CORPORATION
Precision Park
S. Springfield, Vt. 05150
Tel: (802) 886-2256

The Model 5016 Disk Memory provides 40 megabytes of data storage on one fixed disk, and one removable disk in a top loading 5440 type cartridge (with a 3336 type disk). Technology breakthroughs in proprietary track following and magnetic head design allow conservative track densities of 666 tracks per inch with equally conservative track bit densities of 4100 bits per inch nominal. Access time for this advanced moving head disk is 28 msec average, 60 msec maximum. 3600 RPM operation provides a low 8.33 msec average rotational latency and a fast 6.9 megabit serial data rate. The slide and mounted unit includes an integral DC power supply in its 10 3/8 inches of 19-inch RETMA rack. Also available with the micro-programmed, error-correcting Model 8100 "Intelligent" controller which can serve up to eight disk units.

The Model 3002 Drum Memory is the newest of VRC's dependable head-per-track drums. Data capacity is 9 megabits on 128 tracks. Reliable TBM data recording at 2200 bits per inch allows 4096 16-bit words per track formatted in 128 sectors. 3600 RPM operation gives you true 8.7 average access. A dust-tight enclosure and an automatic head actuation mechanism continue the proven VRC reliability. Mounting slides, DC power systems and distinctive front panel are standard. So is the single connector TTL interface. Available with either the Model 3100 sector-buffered controller or the Model 3400 two-word buffer controller. The Model 3008 is a big brother with up to four times the data capacity.

***

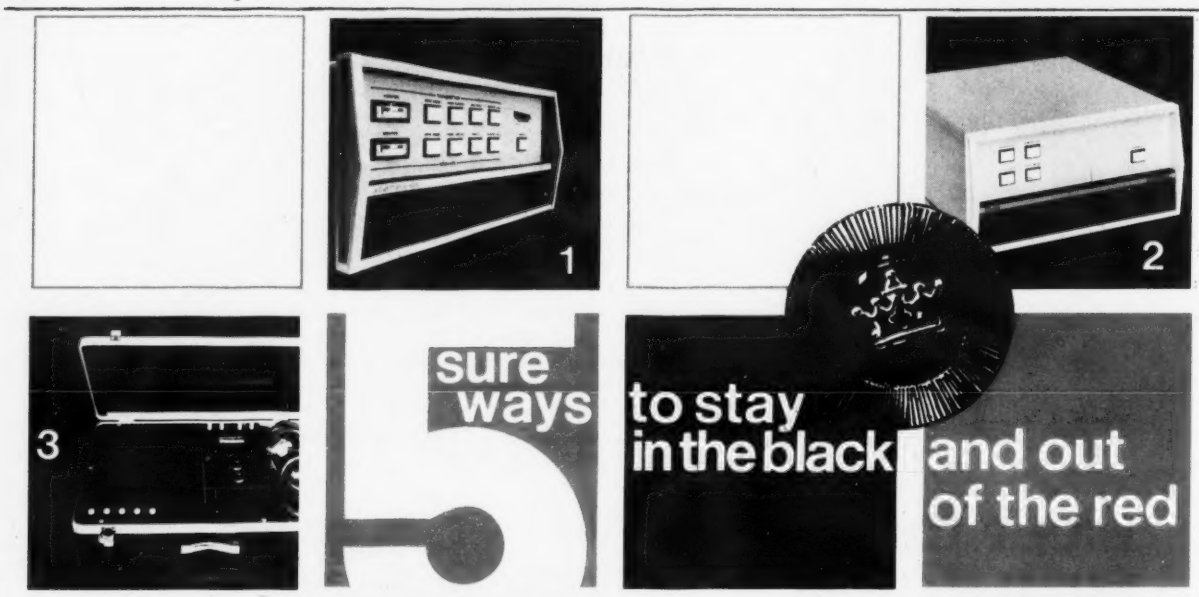
WESTERN UNION DATA SERVICES COMPANY
16 McKee Drive
Mahwah, N.J. 07430
Tel: (201) 529-1170

Western Union Data Services Company will show side by side the 30 character-per-second EDT 300 AST Teleprinter with its paper tape buffer and its EDT 300 Magnetic Send-Receive, a terminal with integrated magnetic tape buffering capability for remote batch and time-share applications.

***

DATA GENERAL CORP.
Route 9
Southboro, Mass. 01772
Tel: (617) 485-9100

Data General Corporation, the number two minicomputer manufacturer in the world, will display its minicomputers, peripherals, and software. A system built around a powerful Nova 800 Jumbo will demonstrate a Real-Time Disc Operating System, Timesharing BASIC, and the new Fortran 5 on a variety of terminal devices. Data General's minicomputers are used for all types of applications, including computation, communications and control/instrumentation.



See how Paradyne can help turn your data communications links into assets instead of liabilities. You can't afford to miss seeing these five proven time and money savers when Computer Caravan '73 comes to your city!

1. The BISYNC-48 super modem featuring the highest throughput available on dial-up lines – plus, guaranteed error- free transmission.
2. Our 4800 bps, automatically equalized M-48 modem with really useable self-test features.
3. The BISYNC Analyzer – the unique test instrument that provides immediate fault isolation in BSC communications links.
4. Our revolutionary remote I/O and computing system that eliminates conventional communications hardware, terminals, modems, and software – Paradyne's astonishing PIX.
5. Service that keeps your links up and running.

Discover for yourself how Paradyne products and service maximize performance and reliability of your data links within a cost/benefit context that makes good business sense.

It's your move now!

Just in case you happen to miss us at the Caravan, contact your local Paradyne office for complete details:

Paradyne Corporation
29350 Southfield Road
Suite 122
Southfield, Mich. 48076
313/559-5360

paradyne

Paradyne Corporation 8550 Ulmerton Road Largo, Florida 33540 813/536-4771

New OEM Products

(While equipment in this column is primarily for Original Equipment Manufacturers (OEMs), in most cases it is also available in single units to interested users.

Further, while much of this equipment is not presently available as such to the end user, it does give some indication of techniques and products that may be incorporated into end-user equipment.)

CPU Contained in Package

NORTHRIDGE, Calif. – A CPU, contained in a 2-in. package which can be used as a central processor, front-end processor or as a satellite system, is available from Teledyne Systems Co.

Contained in the package are 2K 16-bit words of memory which can be expanded in packaged increments of 4K up to 65K. The unit has a 47 instruction repertoire and a 10 μsec Add execution speed.

The units require no maintenance, Teledyne claimed. If a malfunction does occur (mean time between failures is said to be 25 years) the firm will replace the unit.

Teledyne will provide the operating software in ROM or RAM form. Although the firm has not set an exact price for the units, it will range from $500 to $1,000 in quantities of 100, including the operating system. The company will also incorporate the units into a complete system with costs depending on the configuration.

Teledyne is at 19601 Nordhoff St., 91324.

D/A Converters Have Bit Choice

PHOENIX – The PDAC Series of D/A converters from Phoenix Data, Inc. are modular plug-in units that provide a choice of 12 through 16 binary bits.

All models are available with unipolar or bipolar outputs and consist of an internal precision reference voltage generator, analog switches, precision register network, control logic, output amplifier/driver, and a parallel input holding register on the "R" model.

Prices range from $175 to $575 from 3384 W. Osborn Road, 85017.

Printer for POS Terminals

CHICAGO – A dot matrix impact printing device for point-of-sale systems and small adding machine-size terminals is available from Victor Comptometer Corp.

The IPM 130 prints 110 char./sec in 5x7 or 9x7 fonts. The unit has a capacity of 34 char./line, 6 line/in.

Price of the printing device is $275 with quantity discounts from 3900 N. Rockwell St., 60618.

Tape Reader Handles 300 Char./Sec

HACKENSACK, N.J. – A 300 char./sec paper tape reader is available from Data Peripheral Inc.

The 8-channel Model 4300F reader features a LED "opto-hybrid" system capable of driving 10 unit loads of DTL-TTL logic.

Unit price is $580 and in 100 unit lots it costs $464 from 15 Porter St., 07601.

CRT Has Range of Speeds

LOS ANGELES – The Executive Informer from Car-Mel Electronics, Inc., is a computer CRT display and keyboard unit which operates at speeds ranging from 110 to 9,600 char./sec.

The display contains 16 lines, with 32 char./line, using the full 64-character Ascii upper-case set on a 6-in screen.

Unit price is $2,050, dropping to $1,200 in 100 lots from 5794 Venice Blvd., 90019.

Converter for Data Acquisition

LANSDALE, Pa. – The Model IAD-1308 A/D Converter System from Inter-Computer Electronics, Inc. is designed for applications in data acquisitions systems.

With a 1 nsec aperture time, the unit converts analog signals to an 8-bit digital word at rates up to 1.5MHz.

Univac Printer Has Swing-Out Carriage, Removable Cartridge

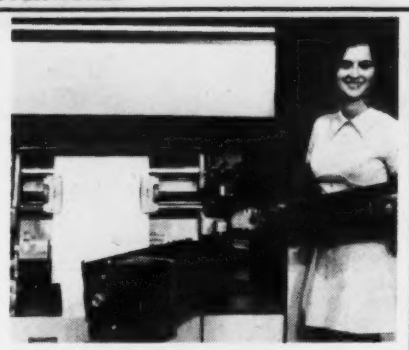
BLUE BELL, Pa. – Univac has introduced a printer system for its 1100 Series and 9700 CPUs that has an easily-removable print cartridge.

Called the 0770, the printer is available in three speeds of 800-, 1,400-, or 2,000 line/min. The printer includes a swing-out print carriage that houses the removable cartridge.

The characters (up to 384) are contained on a metal band. Seventeen standard cartridges are available with fonts that include Ascii, OCR-A, OCR-B and others.

Each character set band contains a machine-readable cartridge code number that allows the program to verify that the proper font is installed on the printer.

The top cover of the machine is raised under program control whenever an out-of-forms, or similar condition requiring operator intervention, occurs. The printer handles 132 print positions but a special feature allows up to 160 positions for two-up or three-up printing.



Univac 0770 Series printers feature removable print cartridge.

The 800 line/min model costs $43,370; the 1,400 line/min unit is priced at $51,875; and the 2,000 line/min model is $73,455. Corresponding rental rates are $1,225/mo; $1,525/mo; and $2,120/mo. Print cartridges cost $400 or $20/mo.

First deliveries for the 1106, 1108 and 1110 are scheduled for September. The printer will be available on the 9700 in the fourth quarter of this year.

Unit Photographs 40,000 Page/Day

VAN NUYS, Calif. – Documate II, an automatic microfilming system capable of photographing 30,000 to 40,000 pages a day, is available from Terminal Data Corp.

Able to copy one or both sides of a document, the $50,000 Documate II offers standard and special 82.5mm or 105mm microfiche and 16mm, 35mm or 70mm multi-imaging or linear formats.

Page sizes from 8.5 in. by 11 in. to 11 in. by 17 in. can be automatically intermixed, and documents are automatically transported, positioned and restacked via a high-speed belt and vacuum hold-down system, which gives resolution-reduction ratios from 16X to 48X.

Operators may hand-feed or stack-feed documents, while automatic exposure control allows various colored stock to be intermixed and photographed without operator-intervention, the firm said.

The firm is at 16130 Stagg St., 91406.

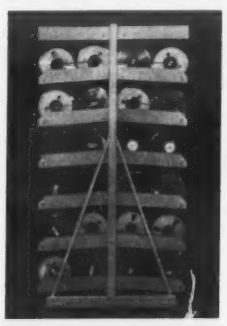
Want more tape-storage capacity with your present canisters and library?

Here's our angle.

Four degrees.

That's Tiltshelf's angle of incline. Tiltshelf stores tapes in tandem, two deep, and our little 4° forward angle allows the second tape in each slot to roll quickly into a Ready position when the front tape is pulled.

But the angle is just a sidelight; the big story is two-deep tandem storage. Because of that, Tiltshelf can almost double your tape-storage capacity by using one storage shelf where you presently use two. That turns exactly 50% of your present, useless aisle space into working, profitable storage space. Thereby increasing your storage-density, which speeds up filing and retrieval, which lowers your retrieval costs.



Another bonus: your most-frequently-used tapes naturally wind up at the front of each slot, further increasing your efficiency. And, perhaps the biggest bonus—you don't have to change canisters when switching to Tiltshelf.

So—our angle can cut your tape-storage and retrieval costs, boost efficiency, increase your tape library capacity without increasing your rent, and other things. For the complete story, contact your local TAB representative. Or, write Tab Products Company, 2690 Hanover Street, Palo Alto, California 94304.

We'll show you some more interesting angles.

Tiltshelf® RSC 1972

TAB PRODUCTS CO.

Armonk Tells DPG:

'$10 Billion Not Enough'

(Continued from Page 1)

the expense cut was to amount to 5%. The Corporate staffs had cut themselves by 10%. The smaller divisions, such as Office Products Division, were cut small amounts, returning $5.9 million improved profit ability.

Two Goliaths

The real cuts were reserved for what Armonk called the "two Goliaths of IBM" – World Trade and DPG. World Trade's cut in expenses was to be $55 million. It made it obediently.

Analysis

DPG was asked by Corporate to cut costs and expenses by $100 million – as much as all the rest combined.

Frank Cary prepared a plan to make the cuts, but argued against it. He recommended another plan which only cut DPG expenses by some $48.7 million. This still involved serious cutbacks. Research on the new computers was to be cut.

(A memo commented that expenditure in this area would not be particularly productive.) The impact of the new policy of unbundling on staffs was argued. And a 600-man cut on the already approved 1969 figures was enforced – just to lessen the risk of entering 1970 with a too high going rate of expense.

But it all seemed worth it. DPG was saved having to cut a further $51 million, while handling 12% more business.

$10 Billion Profit Promised

During all this short-term fighting, a second battle was raging between DPG and Corporate in Armonk. The subject of this battle was the long-range plan for IBM for the years 1968-1974/5.

As prepared by DPG and sent to Armonk for review, the plan would have impressed most corporations (and some countries).

DPG trade volume over the eight years was to increase from the 1969 expectations of $3.5 billion to almost double that, $6.5 billion annually.

Moreover, this was not going to be potentially embarrassing income, like the purchase income of 1968 had been. The plan showed that over 80% of the income in 1974 was to be pure rental income, with the purchase income down to a hard core of 12% (Figure 1).

The DPG divisional planners could reasonably hope to have their plan approved – incorporating as it did a strong growth, and a continued buildup of the IBM inventory in hardware ownership to around $26 billion to $30 billion, of which much would have been written off during the period.

To Armonk, however, the plan did not look to be the triumph that DPG could have expected. The opinions of Corporate Finance on the plan were sent down in May 1969, together with analyses.

Finance, in its breakdowns, did not follow the DPG consideration of purchase/rental. Indeed, the financial analyses saw profits declining as the years went by, rather than shooting to the heavens in the way DPG had presented them.

In the previous eight years, the DPG profit had been 29.6% of its gross – whereas under the DPG plan it would be only 26.5%.

Finance did not think that this percentage decline was consistent with its objective of "normal balanced growth," and therefore disagreed with the DPG plan. It wanted changes to bring the profit picture back into line.

In effect, Armonk was asking DPG for another $1 billion worth of profit over the period.

The Armonk arguments were quite simple to understand. The Armonk memos showed the DPG expenses that were being incurred over the years for field engineering and for marketing.

Although being careful accountants, the

(Continued on Page 25)

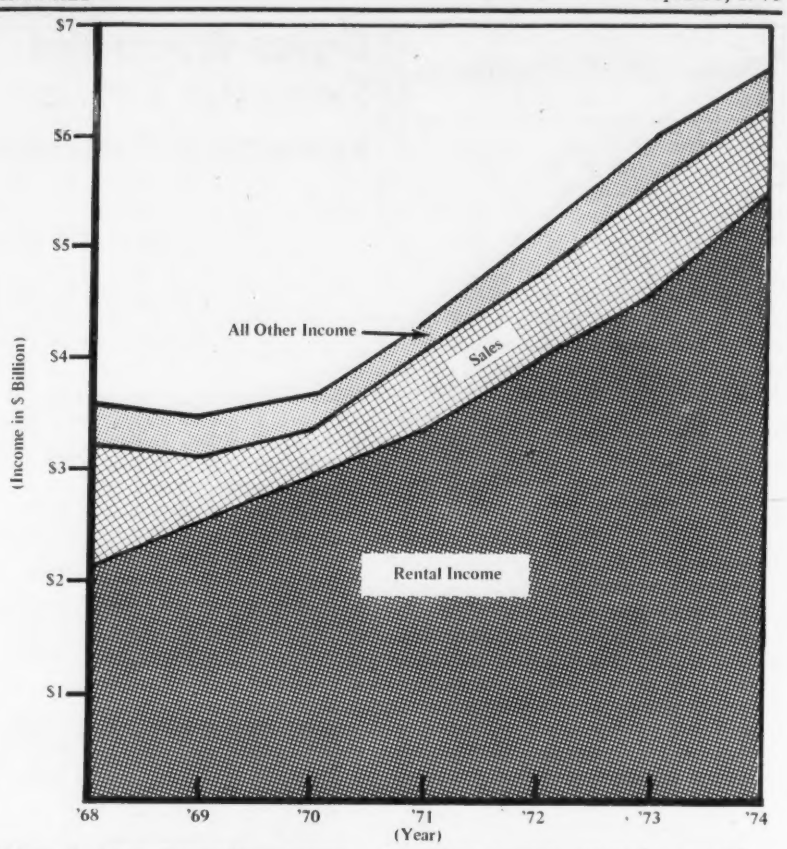
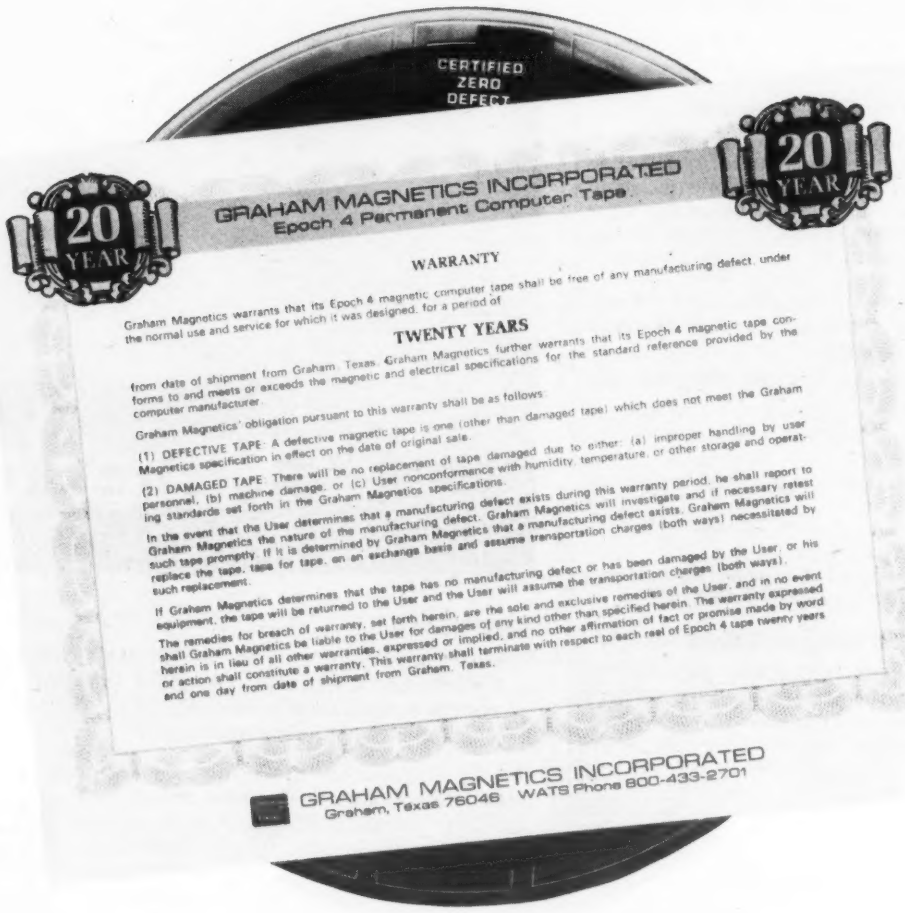


Figure 1. Data processing revenues forecast under the long-range plan, for the period 1968-1974. The forecast shows the annual forecast revenue increasing smoothly after 1969 from $4 billion to $6.5 billion. Because of the importance then being placed upon equipment sales as opposed to rentals, the plan breaks down the revenues into three separate categories – rental revenue, equipment sales revenue and other revenue coming into the DPG. Rental revenue, always the greatest in absolute amount, was forecast to rise during the period to over 80% in 1974. *(Source: IBM's DPG strategic plan submitted in 1969 from the Greyhound Plaintiff Exhibit 326)*

Is it our 20-year guarantee that makes Epoch 4 so good?



Armonk Not Satisfied With DPG $10 Billion Profit, Wanted More

(Continued from Page 24)

finance people worked them out for each of the years from 1968 through 1975; when drawn on a graph, the variations (being less than 2%) practically vanished (Figure 2). This showed no growth pattern to Armonk. The expense ratio did not come down. The profit percentage did not go up. Where was "normal growth"?

Analysis

This then was the scenario as the 370s were being prepared.

IBM had been severely embarrassed by the unexpected 1968 $500 million purchasing of computer systems. It had considered – but rejected – the concept of turning the firm into a computer manufacturer as an outright policy. Now it was demanding $1 billion in additional profit from DPG, over and above the $10 billion that DPG had promised.

At the same time Corporate was restraining DPG from obtaining the desired profits by means of selling more than a small fraction of the company's computer production.

Moreover, Armonk was practically directing the division as to one Armonk-approved way of containing the purchase. Corporate and divisional group discussions were replete with references to multipliers, effective multipliers, maintenance, sales/rental mixes.

Yet although the term "multiplier" was being used freely, it failed to take into account one of the implications noted by Corporate Finance.

To understand just what was overlooked in the IBM discussions, we have to further develop our knowledge of the multiplier, as used in 1969.

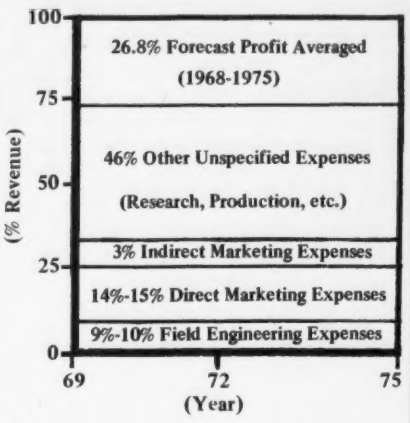


Figure 2. Forecast Expenses of Data Processing Group (1968-1975). While the DPG revenue figures were shown as growing sharply, the Corporate Financial Department was worried about the reduction in the profit margin during the 1968-1974 period. Profits under the DPG long-range plan were estimated at over $10 billion, but this was $1 billion lower than was necessary to maintian the 19.5% of revenue figures at the 1960-1967 figures. Corporate Finance therefore analyzed the expenditures. Based on this analysis it then asked for profits to be increased, presumably back to 29.5% of revenue or better. It also suggested that the field engineering figures were too low in view of the higher maintenance costs being planned during the period.

Source: Corporate Finance review of DPG 1969-1975 Goals, dated May 1, 1969, Greyhound Plaintiff Exhibit 167

When your data transmission goes down, you don't want excuses.

You want that fault fixed. Fast.

Here's how to do it.

Faults in your data communication system, modem and line are automatically identified faster with Antekna's new Model 221 than any other means. We call it the Fault Fixer. Because it fixes responsibility where it belongs within seconds of a data interrupt. Automatically.

And that cuts your downtime down.

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That means you can permanently install the Model 221. There's no connecting and disconnecting cables for tests as is the case with other units.

That's quite a package. Particularly when you figure it quickly pays your money back by keeping your system up. Plus it ends excuses once and for all. For more information on the Fault Fixer, clip the coupon to your letterhead and mail, or write: Antekna, Data Comm Division; 625 Clyde Avenue, Mountain View, California 94040. Telephone 415/965-0600.

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...But IBM Didn't See the Reality

1969: Adjusted Multipliers, Higher Maintenance Cost

By Alan Taylor
Special to Computerworld

In its simplest form the "multiplier" is the number of months' rent, which is selected as the purchase price. Thus if a system rents for $1,000/mo and is sold for $40,000, then the new multiplier is 40. If the selling price is $50,000, then the multiplier is 50.

The primary difference between the raw and adjusted multiplier is simply that the latter considers both maintenance charges (at retail rates) and the 90-day maintenance credit which purchased machines receive.

What Difference?

The effective difference between the raw and adjusted multiplier depended upon the size of the maintenance charge. If the $1,000/mo piece of equipment had a maintenance charge of $100/mo (or 10%), the *net* rental of $900/mo was used in calculating the rental rather than the gross rental of $1,000, which was used in the raw multiplier.

So a $40,000 price tag would then represent a 44-month multiplier rather than a 40-month multiplier.

Analysis

The adjusted multiplier and raw multiplier in 1969 then became the keystones of much corporate planning, particularly concerning the containment of the undesired purchasing of IBM equipment.

The keystone to the containment planning was the theory that the name "maintenance" did not refer to *IBM's cost* of maintenance, but to the *charge IBM arbitrarily made* for maintaining the computers it sold. Thus maintenance could be regarded as a type of user-license income, which would accrue to IBM even from the systems that belonged to other people.

NS Systems

The 1969-1975 operating plan, which called for the replacement of 360s with the "NS" systems (later to be called the System 370s), said the "NS" systems would have "much higher maintenance prices" (which would produce a decline in the rate of selling equipment).

By January 17, 1968, Ted Papes, director of group finance for DPG, gave a "Financial State of the Union" message saying that the trend for purchasing IBM computers was the most serious problem facing IBM in the 1970s, and argued, "The (projected) maintenance price increase seems to me to be absolutely essential and thoroughly justified."

Already there was discussion as to whether the first maintenance price increase should be drastic or simply nominal. Papes' view was that if it were impractical to have an immediate thorough maintenance price increase, then IBM should immediately set plans for two additional annual increases to correct fully the highly vulnerable cost to price condition. "Realistic multipliers on all new product announcements are a must," he said.

However, he did not state what the justification was that he believed in. Years later, the marketing force would still be looking for a rationalization of what it referred to as the "vast discrepancies" between the 360 and 370 multipliers.

Problem With Multiplier

That is was the multiplier that worried Papes, rather than the profitability of the maintenance operation, seems clear from his secondary consideration of the matter.

In discussing the price announcements that were already out (those of the 360, 65 and 75), Papes argued for a purchase price increase – thus effectively increasing the multiplier. Then he continued, "If we cannot have purchase price increase, then I believe that a rental price reduction may be in order."

He also argued that IBM needed to modify sharply, or perhaps eliminate, the purchase option – whereby people who had been using a computer on rental could obtain it at a somewhat reduced price – although this had already been severely cut back on the 360s in an unsuccessful attempt to stop significant purchases.

The sizes of the proposed changes in the multiplier that were discussed were also a topical matter. An adjusted figure of 56.3 was the average NS multiplier used in 1969 planning, compared to 43.4 for a 360/65.

The method of increasing the affected multiplier had been to increase both the maintenance cost and the raw multiplier – that is, the number of months' rental that made up a purchase price.

A key "straw in the wind" that was ignored was in the review of the DPG long-range plan by Corporate Finance. This review noted that the field engineering cost seemed to be too low, compared with the cost of maintenance charges planned for the NS systems.

(Continued on Page 28)

Here's just some of what's happening at the 1973 Computer Users' Forums.

And it'll be happening soon in a city near you:

"We're looking at a key-to-disk system," one user noted, "and the forum on these systems plus the three displays on the [illegible] available — and at the problems might be. In fact, we had never heard of one of the exhibitors before it was mentioned in the panel discussion."

The Computer Caravan/73 is on its way. And the Users and Panelists attending Forums in the beginning of our tour have exchanged a wealth of information on a wide range of topics. Information you can't get in books. Experience-based information from the people who've been through it. User talking to user in shirtsleeve workshops, panel discussions and seminars. It's a unique exchange of information that will benefit you and your company.

FORUM TOPICS

Day 1 — Data Entry — Including keypunch replacement (shared Processor), Intelligent Terminals, OCR, and Direct (on-line) Data Entry.

Day 2 — Communications — Including Data Transmission (dial-up and leased lines/broadband) and Equipment Selection (communications processors and control equipment).

Day 3 — Installation Management — Including Personnel recruitment and training, Programming management and independent peripherals (including memories).

OPEN SESSIONS

Each afternoon features a new, open session for all those who wish to attend. A different subject will be opened up each day at 2:30 for discussion and controversy.

Day 1 — Data Communications Planning
Day 2 — Software Evaluation Panel
Day 3 — Small Systems Panel

PANELISTS

Next stop: Cleveland. And here are some of the panelists who will be there: Gaylord Smith, Nationwide Insurance; Joe Cordrey, C.M. Sales; Leon W. Blount, Bobbie Brooks Inc.; William R. Young and Allen Vendeland, Standard Oil Co. of Ohio; Paul Patram, Carlon Products.

Send in your reservation form now, and your space at the 1973 Computer Users' Forums will be reserved.

The Computer Caravan/73

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(This information is necessary to provide a better forum for you.)

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01 Mining/Construction/Oil & Refin.
02 Manufacturing — Computer or data system hardware, peripherals/ other associated mechanical devices
03 Manufacturing (other)
04 Utilities/Comm. Sys./Transport.
05 Wholesale/Retail
06 Finance/Insurance/Real Estate
07 DP Serv. Bureaus/Software/Plann.
08 Business Services (except DP)
09 Education/Medical/Legal
10 Federal, State and Local Govt.
12 Communications/Printing/Publ.
13 Other:_____

YOUR FUNCTION
01 Corporate Officer
02 Data Processing & Other Operational Management
03 Data Processing Professional Staff
04 Consultant
05 Lawyer/Accountant
06 Engineering — Mgmt./Scientific/R&D
07 Sales/Marketing/Account Exec.
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09 Other:_____

2. Please check the appropriate city:

____ Chicago	April 17-19 (Tues, Wed, Thur)	Conrad Hilton Hotel
____ Cleveland	April 24-26 (Tues, Wed, Thur)	Convention Center (Forums & Exposition) Sheraton Cleveland (Hotel Rooms)

3. Check the day(s) you will attend the Forums.

☐ Day 1 — Data Entry — 9 am-2:30 pm
☐ Day 2 — Data Communications — 9 am-2:30 pm
☐ Day 3 — Installation Management — 9 am-2:30 pm
NOTE: Afternoon Sessions are open to all — free of charge.

4. Your enclosed check will cover all workshop materials, luncheon, Forum admission and admission to the Exposition Hall (make checks payable to "The Computer Caravan")

☐ One Day — $25.00 ☐ Two Days — $50.00
☐ Three Days — $75.00

All Tickets will be held in your name at the door

Exposition only tickets (no forums or luncheon) are $5.00 and should be purchased at the door (ticket good for all three days).

Return this form to:

Frani Blackler
Computer Users' Forum
797 Washington Street
Newton, Mass. 02160

For additional registrations, copy this form — or write for extra copies.

370 Policy, Facts Conflict

IBM Risking a Major Fall

By Alan Taylor
Special to Computerworld

In 1968 IBM realized it had two choices. It could either be content with being the largest computer manufacturer in the world, or else it could try to "deemphasize" the purchase of its systems in every possible way – much as

Analysis

it traditionally had done through the years. This way the idea was to grow, but still to retain ownership of 85% of all the 370 computers marketed in the U.S.

Rental, a prime company goal, had already led to the suing of the corporation under antitrust laws in 1956, and subsequently to its consent agreement to stop the no-sales practice. Thereafter IBM permitted, but tried to discourage, the buying of equipment.

Precarious Mix

The first IBM attempt to mix rental and purchase had allowed substantial rental credits to the "first user" of equipment. This had ended disastrously (from the corporation's point of view) when IBM discovered in 1964 that leasing companies were still able to purchase used equipment, rent it out at lower prices and get their money back in four years. At this time the industry rental income was $1 billion and on the way up.

IBM thought that this situation was corrected in 1965 with the much more restricted purchase credit figures allowed on 360s. By 1966 this policy was found to allow the purchase of new equipment (instead of used equipment) just by using the same length of time as IBM would estimate that the equipment would remain in use after purchase, as a basis of leasing company accounting. In 1966 IBM pushed the new problem aside – concerned over the risk of losing good will, already hurt by hardware programming slippages.

(Continued on Page 29)

Plaintiff's Exhibits No.	Date	Brief Description
593	Nov. 2, 1962	Branch Management Letter #213
644	May 24, 1965	Management Review Committee Minutes
646	Nov. 22, 1965	Management Review Committee Minutes
645	Dec. 21, 1965	Management Review Committee Minutes
662	Aug. 17, 1966	Management Review Committee Minutes
664	Sept. 6, 1967	Management Review Committee Minutes
124	Sept. 11, 1967	1967 Equipment Sales (Papes-Cary)
97	Sept. 21, 1967	Purchase Considerations (Papes-Cary)
650	Nov. 29, 1967	Management Review Committee Minutes
111	Jan. 17, 1968	Financial State of the Union
666	Jan. 25, 1968	Management Review Committee Minutes
123	April 1, 1968	Purchase Multiplier (O'Keefe-Papes)
328	July 3, 1968	1968-1974 Strategic Plan
144	Sept. 18, 1968	Financial Results (Watson-Opel)
118	Dec. 11, 1968	Progress Report to MRC
267	May 1, 1969	DPG 1969-1975 Goals (Rizzo)
319	March 5, 1970	DPG Strategic Plan 1968-74
244	May 27, 1970	DPD Monthly Highlight Report
94	June 5, 1970	NS Announcement

The above data, among others, was used during the preparation of the accompanying articles. The documents, open to the public, are included in the Appendix of the Brief of Plaintiff-Appellant, Greyhound Computer Corp. vs IBM, U.S. Court of Appeals Ninth Circuit No. 72-2553.

1969 IBM Decisions Open to Question

(Continued from Page 26)

No one considered how a higher price for maintenance could be justified at a time when maintenance costs were going down. IBM was swimming against the tides of technology but did not realize it.

Years later, when depositions were to be taken from IBM Corporate officers in conjunction with a lawsuit, Thomas J. Watson Jr. was to say he could not recall any case where the advances in technology had increased maintenance costs.

Yet in 1969 the corporation was being urged that its stability and growth made arbitrary maintenance price increases essential. The data was there – but IBM did not see the reality behind the data.

The important assumption was that IBM customers would automatically take IBM maintenance. Therefore, by letting the purchase price drop, but keeping the maintenance price up, other income could continue to flow into IBM from the equipment that now belonged to someone else.

However, the maintenance prices being charged and planned were known, not only within IBM, but also on Wall Street. It became quite possible for engineers who knew how to maintain IBM systems to obtain financial backing.

With the rumors of the increased maintenance prices for the new IBM announcements, the backers were happy at this extra insurance that the maintenance firms would grow. The growth of independent maintenance firms was indeed implicit in the IBM decisions, but does not appear to have been taken into account anywhere in IBM decisions.

IBM, therefore, contributed, through the voluntary increase in maintenance prices, to providing a substantial competitive maintenance force to support non-IBM owned equipment, thus further strengthening the forces opposed to the IBM "rent-only" philosophy.

Later these companies were to be available to help peripheral manufacturers plan add-ons, interfaces and trouble-shooting methods, and contributed materially to the boom in peripherals manufacturers in the 1970s.

The rise of the maintenance firms also created an ability of non-IBMers to comment knowledgeably on IBM maintenance practices.

Currently it may be too soon to say definitely whether the 370 maintenance price increase really contributed, as designed, to the future stability of IBM, or whether it in fact created a new, and uniquely skilled, competitive operation. If so, it followed history, just as the 1965 mistakes had created a "new computer" leasing operation.

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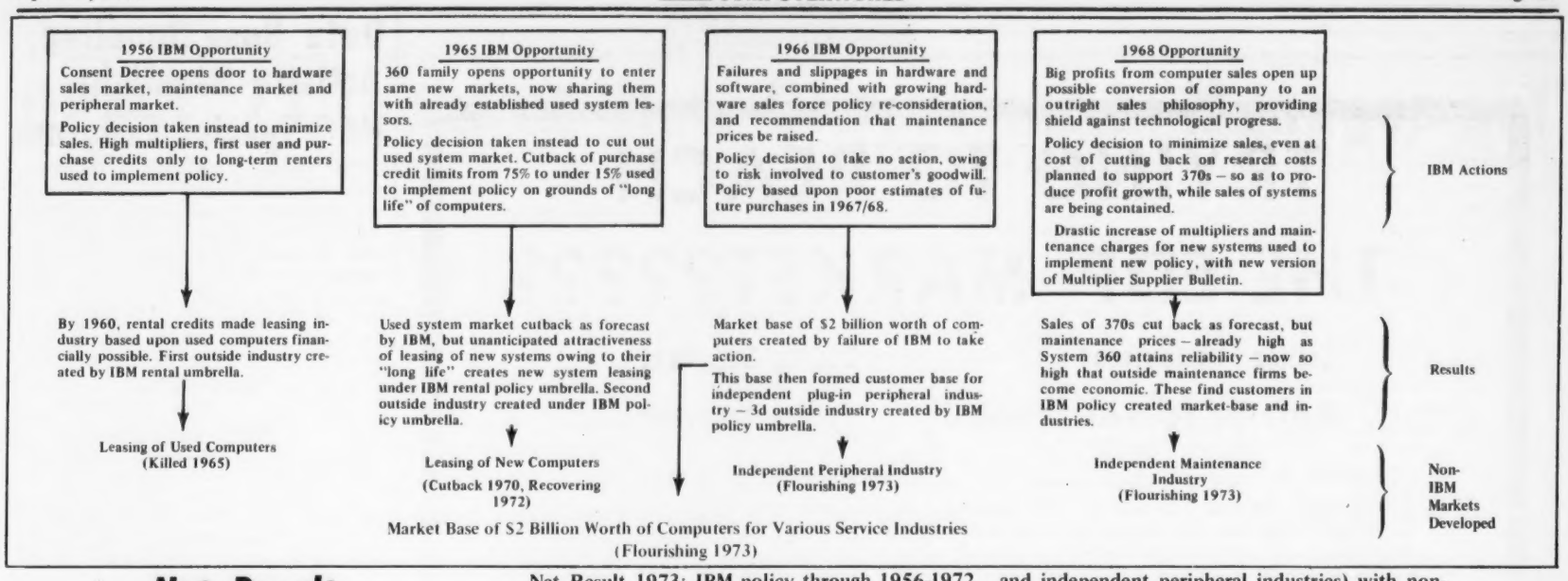
Financial Computer Services
Cleveland, Ohio

"We have greater financial control over municipal services than ever before. And the reason is our NCR Century."

Thomas G. Zeidell,
Management Systems Administrator
City of Pontiac, Pontiac, Michigan



Market Base of $2 Billion Worth of Computers for Various Service Industries (Flourishing 1973)

Net Result: 4 New Industries

Net Result 1973: IBM policy through 1956-1972 has directly assisted in the creation of four separate industries (used computer leasing, new computer leasing, independent computer maintenance and independent peripheral industries) with non-IBM firms receiving all ground-floor opportunities. In addition a solid $2 billion market base has been acquired by the industries.

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Stratton & Terstegge, Inc.
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"Now we measure every activity by its contribution to profit. Key to our success is the NCR Century computer system."

C. J. Sumner, Manager of Data Processing
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"With the NCR Century computer, off-the-shelf software is economical and practical, and conversion is quick. Our return on investment began in less than a month."

Harold Canada, Vice President
Hafers', Inc., Salt Lake City, Utah

"Our NCR Century computer prints prices and invoices for same-day shipment. That's great customer service. And we've increasd turnover with less staff and inventory."

Robert R. Buchanan, President
Northwestern Drug Co., Minneapolis, Minn.

"I was impressed most by the add-on features of the NCR Century, since we are looking for a 100% growth factor in the next 5 to 10 years."

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University of Tampa, Tampa, Florida

"Our NCR Century Computer helped us increase our annual sales $5,000,000 and decrease our inventory $170,000."

John Caputo, President
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"The fact that the NCR Century 100 computer system could grow along with my retail operation sold me on NCR."

Yale T. Dolginow, Exec. Vice President
Dolgin's, Inc., No. Kansas City, Missouri

"We compared the main manufacturers of computers and picked NCR primarily because of our past experience with the service they've given us on other equipment in our bank."

Wendell H. Conaway, V.P. of Data Processing
Commercial Bank at Daytona Beach
Daytona Beach, Florida

"Town government and citizens of every community are demanding far more accountability from the people who run the schools. Our NCR Century enables us to meet this demand."

Paul R. McDevitt, School Business Administrator
Darien Board of Education, Darien, Connecticut

"To match our NCR Century's performance with another computer system would have cost us twice as much."

Roy J. Bernard, Director of the Computing Center
Southeastern Louisiana University

"We chose the NCR Century because the product for the price was better than anyone else had to offer."

Dan Seyfarth, Data Processing Manager
McHenry Hospital, McHenry, Illinois

"Our NCR Century System has meant new life for this office. Our patient accounts are now always current, accurate and under control."

R. B. Watson, Comptroller/Treasurer
ST. Joseph's Hospital, Asheville, North Carolina

"The greatest advantage from our NCR Century system? I'd say customer service. We can respond to our customers' needs much better than we could before."

Walter F. Urban, Jr., Treasurer
Union Federal Savings & Loan, Pittsfield, Mass.

"With our NCR Century C.I.F. System all data on each customer is in one place for account analysis and creative marketing. Our growth depends on this."

Bert Lance, President
Calhoun First National Bank, Calhoun, Georgia

"Our NCR 280 Terminals brought our stores in Texas two days closer to us."

Archie W. Crittenden
Director of Merchandise Information
Dillard's, Little Rock, Arkansas

370 Support Pricing Shows IBM Possibly Risking a Major Fall

(Continued from Page 28)

By 1967, two years after the new policy had been promulgated, leasing company purchases were acknowledged to be the corporation's biggest problem for the financial planners of IBM. And by now the industry rental income was $2 billion.

In 1970, following Thomas J. Watson Jr.'s repeated acceptance of the concept that IBM had once again to choose between remaining essentially rental, or really just a manufacturer, the IBM planners had selected the maintenance pricing and multipliers as the available IBM-controlled elements which they felt would increase the company's ability to grow, and obtain $10 billion profit from DPG alone – while still retaining ownership of 80% of IBM-made equipment in use in the U.S.

In a memo Watson recognized the crossroads, but noted that the corporation should fight against the purchases, rather than learn to live with them.

Factually the maintenance prices were increased on the 370s. Then, another apparently unanticipated event occurred just as it did in 1960 and 1966.

This time IBM had not foreseen the resulting rise of the outside engineering capability, both to perform computer maintenance, and also to engineer products compatible with IBM equipment, even making mainframes.

The new IBM maintenance policy was in direct conflict with the technical facts of the situation. If, in fact, IBM's "planned growth" structure options had been reduced to the one artificially keeping maintenance costs high, when technology was making it possible to bring maintenance costs down, then one conclusion can be drawn: far from saving the corporation's growth, the 1969 decision risked the corporation's stability.

The fact is that the internal IBM 1969 decision to raise 370 maintenance prices appears to have oversimplified the situation just as much as the 1965 decision (which later allowed the leasing companies to put up their purchase of 360s), and as much as the 1956 decision (which later allowed leasing companies to start their procurement of used 1400 and 7000 computers).

If the only way in which IBM can preserve what it calls a normal growth pattern is (as the planners of 1969 seem to indicate) to rely upon drastic increases in maintenance prices at a time when technology is permitting maintenance price reductions, then the corporation is risking a major fall.

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Data Base Handling, Artistry Highlight NCC Special Program

NEW YORK – In addition to the extensive range of sessions under the Methods and Applications and Science and Technology programs at the National Computer Conference here June 4-8, a special program has been planned to offer more variety to NCC attendees.

Under the direction of Dr. Charles F. Freiman, manager of systems development for IBM Research, Yorktown, N.Y., the program includes a one-day program on the computer arts, and a special day and a half seminar on managing the impact of generalized data bases.

Five sessions treat such topics as computer technology as a public resource, venture capital for the computer industry, and outlook and prospects for marketing abroad, which is organized by the Department of Commerce.

There will also be a session on career development for computer professionals and one on the economic future of the DP industry, which is organized by the editors of *Business Week*.

The special seminar on managing the impact of generalized data bases will be held Thursday and Friday, June 7-8, and is being organized by the Special Interest Groups on File Description and Translation (Sigfidet) and Business Data Processing (SIGBDP) of the Association for Computing Machinery.

Presentations will review experiences and problems of companies which have installed generalized data bases and will offer a suggested plan for achieving maximum gain through such systems, conference organizers said.

Registration for the seminar, which includes a copy of the proceedings and a separate Thursday luncheon, is $40.

The Thursday luncheon will feature an address by Edward N. Cole, president and chief operating officer of General Motors Corp.

Societies/ User Groups

Early Deadline May 15

MONTVALE, N.J. – Prospective attendees of the National Computer Conference in New York City June 4-9 are urged to mail their reservations by May 15 to the sponsor, the American Federation of Information Processing Societies (Afips).

Those submitting their registrations before this date will be mailed all badges, program booklets and other registration material. Applications received after May 15 will be processed for pickup at the registration desk at the N.Y. Hilton, Afips said.

In addition, members of constituent societies registering in advance receive a $10 reduction.

Afips is at 210 Summit Ave., 07645 and the toll free telephone number is 800-631-7070.

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DPMA '73 Looks at 'New Dimensions in Management'

CHICAGO – "New Dimensions in Information Management" is the theme of the 1973 International Data Processing Conference and Business Exposition at the Conrad Hilton Hotel here June 26-29.

Twenty-four seminars, emphasizing developments in problem-solving trends and techniques, will be featured from Wednesday afternoon through Friday morning.

Full registration includes a selection of six seminars from the categories of DP management, computer center management, peripherals, systems and software, operations and data file management.

In the DP management sector, seminars cover topics such as data administration as the nerve center of a company computer activity; motivating the data processor; and long-range systems planning.

Topics in the computer center management center are: protect or perish; operations; the mini in both large and small businesses; and "some systems shouldn't use chained file techniques!"

The peripherals area features sessions on data entry, optical scanning, computer output to microfilm and data communications.

Societies/ User Groups

Seminars on time-sharing applications; impact of virtual memory on design and installation; applications using retrieval packages and case studies of on-line order entry systems comprise the systems and software sector.

In the operations area, attendees may hear discussions on the response time problem of a real-time system; remote-batch processing; policies and practices for aiding computer conversions; and recovery and restart in a real-time system.

Data file management is treated in seminars on data base concepts and creation; planning and organizing a data base system – a case study; file operations and structures; and use of shared data files.

William L. Lindholm, vice-chairman of the board of AT&T, will deliver the keynote speech Wednesday morning on "Data Management – Prospects and Perplexities."

Particular emphasis will be placed on whether the management sciences have kept pace, or can, with technological developments in the data communications field.

Application-oriented one-day workshops, held Tuesday, offer attendees an in-depth look at areas ranging from banking, insurance, manufacturing, medical/hospital, governmental applications, to system development.

The workshops are included as part of the conference registration, which is $135 for DPMA members and $175 for others.

Student fees are $15 for members of DPMA-sponsored DP student organizations in colleges and $25 for others.

On Monday and Tuesday, attendees may tour the facilities of the United Air Lines Reservation Center, First National Bank of Chicago, *Chicago Tribune*, Kitchens of Sara Lee, Teletype Corp. and Bell Laboratories.

The exposition area, which will feature special software exhibit rooms, will be open June 26-28, from 10 to 6 and until 8 p.m. on the 27th.

The DPMA is at 505 Busse Hwy., Park Ridge, Ill. 60068.

Test Systems Topic Of April Seminar

FRANKLIN LAKES, N.J. – A User Seminar on Automatic Test Systems sponsored by Instrumentation Engineering, Inc. will be held April 30 at the Marriot Motor Inn, Saddle Brook, N.J.

Formal presentations will cover a wide range of topics including the economics of automatic testing and high-frequency logic testing.

Invitations are being extended to users of all types of computer-controlled test systems. Requests for invitations can be made from Kathleen McMillan, Instrumentation Engineering, 769 Susquehanna Ave.

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Stability: As a major company committed to the memory market, we're going to be around tomorrow and a lot more tomorrows to come.

But the biggest reason for our growth has been *satisfied customers.* Satisfied on *cost* as well as *performance.*

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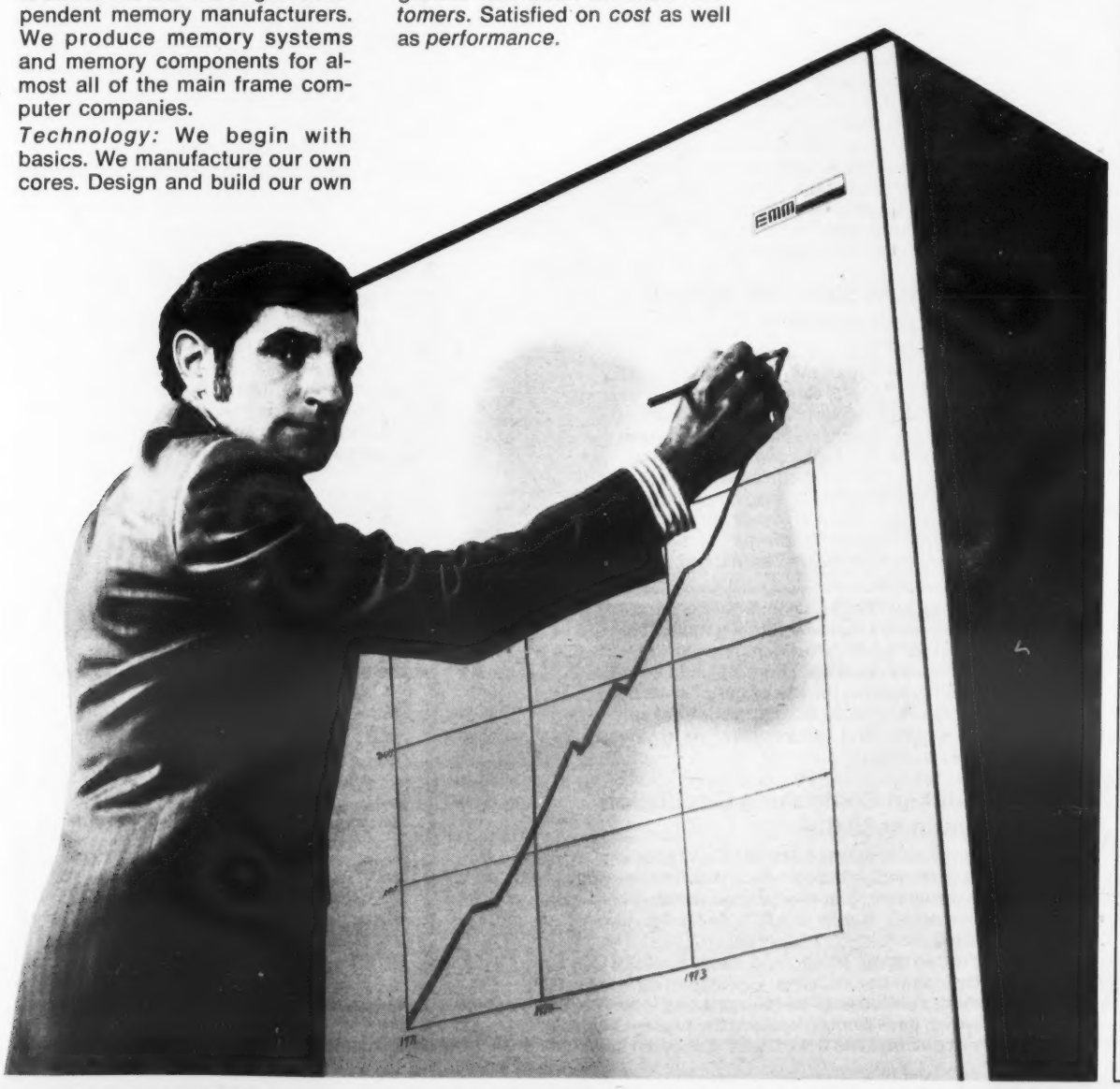

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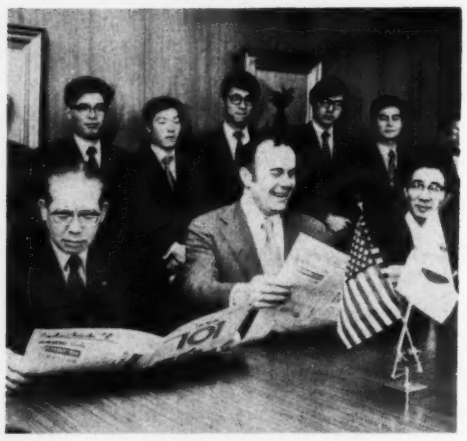
As a joint venture of Computerworld, Inc., and Dempa Publications, Inc., *Shukan Computer* will provide the only newsweekly for the Japanese computer community. Like its sister, *Computerworld*, *Shukan Computer* will cover the latest developments in all aspects of the computer industry; including hardware, software, services, application techniques and industry trends.



Hideo Hirayama, President of Dempa Computerworld Company and Patrick McGovern, President of Computerworld, Inc. look at the first copy of Shukan Computer.

Dempa Publications is the leading Japanese electronics publisher.

Dempa publications is currently the leading Japanese publisher of information services on electronics, including *Dempa Shinnbun*, the 200,000 circulation daily newspaper of electronics. Dempa maintains twenty-five editorial offices throughout Japan, the U.S. and Europe, which, along with *Computerworld's* editorial staff and correspondents, will provide the largest newsgathering organization of its kind in the world.

The Staff of Dempa Computerworld Inc.

Dempa Computerworld Inc. will do more than publish.

The new company set up to publish *Shukan Computer* is called Dempa Computerworld, Inc., and it will become involved in a variety of communications activities. It will conduct surveys on the Japanese computer market, hold seminars on new computer equipment and techniques, and, in early 1974, plans to run a "Computer Caravan" Forum and Exposition. Similar to the U.S. Caravan, the Japanese Caravan is tentatively scheduled for five of Japan's largest cities. Right now, *Computerworld's* U.S. and European Caravans are scheduled for 28 cities in 1973, and a total attendance of more than 85,000 professional visitors is expected.

Japanese computer market large and growing.

Right now, Japan is the largest single-country computer market outside the U.S. As pointed out by *Computerworld's* President, Patrick J. McGovern, "There are now over 15,000 computers installed in Japan, and the number is growing at over 25% per year. This growth and the current liberalizations of Japanese import policy on computer equipment makes Japan an especially attractive market for computer product and service marketers headquartered in the U.S. and Europe."

The Japan Ministry of International Trade and Industry indicates that by the end of 1975 there will be 38,000 computers worth over $12 billion in Japan. There will also be very rapid growth in the use of peripherals and terminals, and services and contract software, providing almost unlimited business opportunities.

Shukan Computer's Circulation starts at 35,000

Initial circulation of *Shukan Computer* is guaranteed at 35,000, which provides in-depth coverage of computer users and industry personnel. Based on IDC data file lists and the resource lists of Dempa, circulation is divided about 80% to end-users and 20% to the computer industry. Circulation development methods will be the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.

Advertising in Shukan Computer is easier than it looks.

Advertising sales for *Shukan Computer* will be handled in the United States by Computerworld Representatives. Rates are reasonable, based on a CPM of $35 (at current conversion levels—All rates are in Yen, and are estimated in dollars for convenience only). Full-page units are 9½" x 14½". Smaller units are available.

Also, *Shukan Computer* will provide translation services and aid in the establishment of marketing channels for companies new to the Japanese market.

Don't you always celebrate a birth with a cigar?

Shukan Computer hopes for best of both.

As Pat McGovern puts it, "*Shukan Computer* will combine some of the best features of *Computerworld* with some of the proven successful techniques of Dempa Publications, to produce a publication that is unique in Japanese trade publishing. We expect it to be a great success!"

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CI Notes

Data Recall, Plessey Sign

CW West Coast Bureau

LOS ANGELES – Data Recall Corp. El Segundo, a manufacturer of computer memory systems, has signed a marketing agreement with Plessey Co.

Plessey will serve as Data Recall's OEM marketing agent for the U.S. and Europe through its offices at Santa Ana, Calif., and Geneva, Switzerland.

Data Recall's end-user marketing agent is Computer Industries Group, Stamford, Conn. Its territory is the U.S., Canada and Europe.

Data Recall makes memories for data acquisition, telecommunications and general-purpose computers.

New Firm to Aid Paradyne

LARGO, Fla. – U.S. Leasing International and the St. Paul Companies have agreed to provide Paradyne Corp. with financing for leases of up to $7.5 million over the next three years.

Under the agreement, the two firms have formed a jointly owned company which will purchase Paradyne equipment as it is placed with the company's users under lease or rental contracts.

Potter Must Pay MAI by Aug. 31

NEW YORK – Arbitrators have disallowed an attempt by Potter Instrument Corp. to terminate its $2.1 million settlement agreement with Management Assistance Corp.

Under this recent decision, Potter must pay MAI $1.1 million of the remaining $1.9 million by Aug. 31, according to MAI. The original amount agreed on was to compensate MAI for releasing its exclusive marketing rights for some Potter equipment and for claims against Potter for damages.

. . . On the Rebound

SAN DIEGO – Digital Scientific Corp. has been awarded over $300,000 in a counterclaim against the Bryant/Ex-Cell-O Corp. An arbitration panel ruled that the disk drives supplied by Digital Scientific performed as required under the contract.

Supershorts

Telex Computer Products, Inc. has delivered its first 6410 Tape subsystem to Europe and is now in production. The 6410/6411 is a plug-to-plug replacement for the IBM 3410/3411 on IBM Systems 370 and 360.

– – –

GRI Computer Corp., OEM mini maker, has cut most of its marketing staff in a move expected to mark a closer tie with Focus Systems, a system house on which it has a purchase option. The Focus IV system is built around a GRI 99 mini, and is sold through distributors.

State of the Industry – Part II, Foreign

Overseas Shipments Show Steady Rise

By E. Drake Lundell Jr.
Of the CW Staff

MONTVALE, N.J. – "The overseas market has become an increasingly important source of demand for U.S. manufacturers," several researchers agreed at a recent conference sponsored by the American Federation of Information Processing Societies (Afips).

The group, which tried to get a handle on the present size of the computer market and future growth areas in the industry, estimated that 45% of all 1971 shipments by U.S. mainframe makers went to markets outside the U.S.

In total this amounted to overseas shipments of around $3.3 billion in that year, the Afips report on the meeting said.

"Furthermore, overseas shipments have increased steadily as a proportion of total shipments during recent years," the group noted, and therefore "profits derived from this source have become very important."

The study indicated the total revenue from overseas for U.S. manufacturers was around $4 billion or 27% of their total revenues.

Overseas shipment of general-purpose computer systems was estimated at having a value of $3.3 billion in 1971, and this is expected to almost double to around $6.4 billion by 1976, the industry prognosticators agreed.

The U.S. shipments of minicomputers and dedicated application computers in 1971 had a value of $60 million, the report stated, and this is expected to grow dramatically to between $800 million and $900 million by 1976.

On the balance of trade front, the Afips report noted that "in 1971 computer industry reports totaled $1.3 billion while corresponding imports were only $119 million.

"Thus, exports of computing equipment contribute in a very significant way to the U.S. balance of trade," the report noted.

At the same time, however, Afips noted that almost 60% of the shipments made by U.S. manufacturers are manufactured in plants overseas and so are not counted in the exports figure.

The worldwide revenues of U.S. firms in the general-purpose computer systems category were placed at $8.6 billion and the Afips report estimated that their revenues will be between $14 billion and $18 billion by the end of 1976 worldwide.

In the minicomputer and dedicated application computer area, the group placed worldwide 1971 revenues at $310 million and estimated this would reach between $750 million and $900 million by 1976.

Total worldwide revenues for independent plug-compatible peripherals makers were set at $320 million in 1971 and the consensus was that this would grow to between $500 million and $700 million by 1976.

Worldwide leasing revenues were placed at $670 million in 1971, and this category of revenues is expected to jump to between $900 million and $1.6 billion in the same five-year period.

In the services area, worldwide batch revenues of U.S. firms are expected to grow only slightly by 1976 from the $1.1 billion registered in 1971. At the same time, on-line worldwide revenues are expected to increase from $590 million to between $1.4 billion and $2 billion.

In the 1967-1971 period, the report showed that both exports and imports of computer equipment posted steady growth, but that the export growth rate far outstripped that of the imports.

In 1967, exports amounted to $475 million while imports were $20 million, the report said, giving exports a net value of $455 million. In 1971, it showed that exports were valued at $1.3 billion while imports were $119 million for net exports of $1.1 billion.

Overall, the report noted that the U.S. supplied 77% of the installed computer base worldwide by value and 73% of the base by number. European firms accounted for 10% of the installed base by value and 12% by number, while Japan supplied 9% of the base by value and 11% of the installed computers by number.

Commerce Figures Show Exports From U.S. in 1973 Off to Fast Start

CW Washington Bureau

WASHINGTON, D.C. – For the first two months of this year U.S. exports of computer equipment are running over 10% ahead of last year's pace, according to recent statistics from the U.S. Commerce Department.

Computer equipment valued at $121.8 million was shipped during the month of February, the study showed, bringing the total for the year-to-date up to $235.2 million.

Last year the February total was only $104 million and the total for the first two months was $209.9 million in exports of computer equipment, Commerce said.

The best market for U.S. equipment was Western Europe as a whole, the study indicated, taking computer equipment made in the U.S. valued at $124.6 million.

A closer look showed that the original members of the European Economic Community (of which West Germany and France are the major markets for U.S. equipment) took U.S. exports valued at $77.5 million.

UK Contribution

The UK imported equipment valued at $28.7 million from U.S. suppliers, which brought the total for the new Common Market to $109.6 million of the imports that went to Western Europe.

Next in the rankings was Canada, which received equipment with a total value of $41.8 million from the U.S. during the first two months of 1973, followed by Japan which imported equipment with a total value of $24.3 million in the same period.

Latin American countries accounted for exports of $15.3 million with most of those exports going to members of the Latin American Free Trade Association ($14.7 million).

Asian countries took equipment valued at $13.5 million, the report said, while Australia and Oceania took equipment worth $9.4 million and African countries imported $3.2 million worth of computer equipment from U.S. plants.

Lessors Urged to Put Cash Into Terminals

SAN DIEGO – Lessors should seriously consider shifting their cash into terminals and terminal-oriented systems, according to Lowell D. Amdahl, president of Compata, Inc.

"There will be a tenfold increase in communications terminals by 1980 which will place great demands upon capital for the communications and computer industries," he observed at a recent chapter meeting here of the Association for Computing Machinery.

"Leasing companies haven't caught on to this area like I think they should with cash being returned to these companies. It seems to me that the industry is going to need capital, both in the communications side of it and for the smaller companies, especially those that want to take the plunge with their own terminals," he said.

"There is a need on both sides," he continued, "and I guess I'm trying to encourage the recognition of the need and what I would think would be the availability of funds."

"With drying up of mainframe profit potential, the lessors can find a rich field of future growth in this segment of the industry."

Amdahl suggested that prime markets for terminal leasing exist with smaller firms in the areas of retail and transportation, which did not have a tradition of large capital outlays for technological equipment.

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'Born of Revolution'

Minis Expected to Change Lifestyles More Than Maxis

By E. Drake Lundell Jr.
Of the CW Staff

GAITHERSBURG, Md. – The impact of the minicomputer "will be far greater – on our lifestyles and workstyles – than anything ever produced by the first three generations of computer mainframes," according to George Vosatka, president of Varian Data Machines.

The minicomputer was not just an evolutionary product of the computer age, he said, but rather "a revolution born of revolution."

Speaking at a symposium on "Minicomputer Trends and Applications," sponsored by the IEEE and the National Bureau of Standards here recently, he claimed that "far from settling down, mini-ism is just beginning to take hold."

End-User Emphasis

There are several trends in the industry at the present time, he noted, including a new emphasis on end-user support among the more traditionally OEM-oriented mini makers and a full spectrum of I/O systems and mass storage devices for minis.

But more importantly for the future, he indicated, is "the explosive, overlapping developments in new mini hardware, software, peripherals and applications."

These overlapping developments, he said, are the "driving force of the mini revolution."

First, he noted, minicomputers could take advantage of changes in technology more quickly than their larger counterparts, because they had a shorter development cycle time, sometimes only six months compared with the three-year development for larger systems.

The second phase of the minicomputer revolution is in software and Vosatka noted that in this area "we're just getting up a head of steam."

But at the same time, he continued, minis now come available with a wide range of software not in existence a few short years ago.

In addition, he added that developments in the area of virtual memory "may be a bigger boon to minis than maxis because of the mini-word-size limitation," and he indicated that specialized software for specific applications areas is also under way.

In the third area contributing to the mini revolution – peripheral equipment – Vosatka stated there was both good news and bad news.

First, he said, the "mini peripherals are alive and well." But he felt that most of the peripherals are just borrowed from the mainframe world at large and that they have often not been developed in conjunction with the mini mainframe design.

"I think the next great challenge in our industry is to develop peripherals which match the mini mainframe in three parameters: price, performance and reliability," he said, predicting that day would bring "a quantum leap in mini systems performance."

But even with all of these developments, the design and implementation of applications will be the "acid test of the mini's revolutionary status," Vosatka said.

The minicomputer has pioneered applications in two areas, he claimed, including communications processes and in applications where large systems were too costly – such as point-of-sale automation and in some cases in the medical field.

However, he noted, the real mini revolution comes because the mini "shows the uncanny ability to stimulate cost effectiveness in concert with other resources."

Nowhere, he said, "is this more apparent than in the mini's effect on large computers."

Today, he said, the minis are helping the super-computers become the "super-producers" that was predicted for them in the past, because they are applied in ways to make the large machine more efficient by allowing it to communicate with a larger number of users than in the past.

Users Discovering In-House Monitoring

CW Washington Bureau

MCLEAN, Va. – The market for measurement and test equipment to evaluate computer system performance has definitely blossomed and will flower even more over the next few years as measurement firms move toward the marriage of measurement equipment and dynamic scheduling devices.

At least that is the outlook predicted by Thomas E. Stone, president of Tesdata Systems Corp., manufacturer of the SUM and X-Ray measurement tools here.

Stone indicated that user interest in measurement tools is five times higher this year than last year and that the increased interest will cause the overall measurement market to double this year with even greater growth predicted for next year.

In 1972, he said, software measurement and monitoring packages accounted for about 33% of the revenues in the industry, but, he said, this percentage would drop dramatically to around only 20% this year as more and more users turn to the hardware devices for their measurement functions.

The reason, he said, is that software tools add to the monitored computer system some overhead that is not added by the hardware tools.

Also, he said, hardware monitors have dropped in price to a point where they are competitive with the software devices.

By 1975, Stone predicted the overall market for measurement equipment would be at least $25 million.

At that point the market might be getting to a critical stage where the mainframe makers might respond to the market by incorporating measurement devices or packages into the mainframes instead of having them just as auxiliary equipment, he said.

However, Stone noted, the market still has a lot of growth in it for the five or six years before the computer manufacturers decide to respond, and there will always be a place for independents "who can do the job better."

Independents will still have a lot of business in helping users find problem areas in their operating systems and in other areas that are probably not covered by monitoring or test equipment built into mainframe systems, he said.

In addition, he forecast real breakthroughs in the area of combining monitoring and scheduling functions that would allow users to dynamically alter their scheduling routines as their workloads changed or varied during production hours.

At present, Stone said, the major users of monitoring and measurement equipment are large users with complex shops, but he indicated the existence of newer low-priced units would bring measurement equipment within the range of smaller users.

With the new equipment that will be developed by the manufacturers in the business, he said, a small installation could have a basic system in-house and send out tapes of system performance to manufacturers for an in-depth analysis of its problem areas and the areas to check closely with the in-house smaller monitors.

At present, Stone said a DP center installing a monitoring or measurement device should be able to improve its running time on an average of between 15% to 20% at the first pass with the unit.

And since job streams and configurations change relatively rapidly in the business, he said, an on-going monitoring program would enable the user to keep inefficiencies from creeping into the system unexpectedly.

Expansions

The Spectron Corporation, a specialty supplier of data communications testing and control equipment, has moved to larger facilities at Church Road and Roland Ave., Turnpike Industrial Park, Moorestown, N.J.

Tal-Star Computer Systems, Inc. has established a full-service Western Regional Office in Los Angeles.

Advanced Memory Systems, Inc. is leasing a new building to expand its facilities to 140,000 sq ft.

Wang Laboratories' PHI Computer Services Division opened a branch data center at 395 Totten Pond Road, Waltham, Mass.

Diablo Systems, Inc. has opened two district offices in Marlton, N.J., and Dayton, Ohio.

Datamark, Inc., producer of data processing labels, is moving to a 30,000 sq ft facility at 2020 Enterprise Parkway, Twinsburg, Ohio.

The RCA Service Co. plans to establish a sales, service and warehouse base in Burlington, Mass., to support its Teletype leasing and servicing activities.

Aspen Systems Corp., a Pittsburgh-based information company, has opened a Rockville, Md., facility to serve users of its health care information services and full-text information retrieval systems.

ECRM, Inc., manufacturer of computer-based OCR data-input systems for automated typesetting operations, has moved into 50,000 sq ft quarters at 205 Burlington Road, Bedford, Mass.

Federal Display Market May Drop

NEW YORK – The total government display console market will reach its peak of around $733 million in 1973 and then decline to about $657 million by 1977, according to a study by Frost & Sullivan, a market research firm here.

Plummeting the most sharply will be the military aircraft segment, which is expected to drop from its $300.9 million in fiscal '73 to $247 million in '77.

Groundbased and shipbased portions, currently about $377 million, will decline at a lesser rate, to $349 million in the same period.

However, the Nasa Space Shuttle and Skylab programs will see increased buying of display hardware into 1977, growing from $21.8 million in 1973 to $30 million.

The FAA buying will initially increase, from a current $33 million to $49 million by 1975 through the purchase of Arts II and III displays, and the automating of 20 ARTCC systems. However, this segment is expected to decline to $30.6 million by 1977, the report said.

Saab Moves Eastward

STOCKHOLM – Saab is pursuing the DP market in the Eastern bloc through agreements with Videoton, a Hungarian firm, that provide for joint development of equipment and information exchange.

One of the first products under the agreement is expected to be a jointly developed minicomputer, based on Saab architecture, according to *EDP Europa Report*.

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From Basie to Bits

DP Like Music to This Executive's Ear

NEW YORK – Many people have entered the computing field through various doors, directly or indirectly. But Eddie Jones, with a major in music and 10 years as a bass player in Count Basie's band, has to have one of the more unusual backgrounds for the president of a service bureau and facilities management firm.

"Music is a discipline and I brought the sense of discipline instilled by music to the art of the computer," he observed. False notes in either medium expose amateurishness and inefficiency that can inflict disastrous results on form, harmony and the perfection sought in both, he said.

"The computer is a tough disciplinarian, and there are no 'almosts' in either music or computer work. You hit right on or you miss completely," he added.

In the years with Basie, he played dates all over the U.S. and Europe, and appeared with the band at a command performance for Queen Elizabeth in London in 1954. In 1960 he played at the Inaugural Ball for the late President Kennedy. His final performance with Basie came at the Seattle World's Fair in 1962.

Turning Point

Long years of standing for long hours during hectic road tours with Basie began to afflict Jones in both the legs and the sense of security, he said.

In 1962, he parlayed his music degree into a nine-year career with IBM, starting out as an assistant engineer and working up to assistant engineering manager.

After the IBM stint, he worked for a time for CTE Computersa, a Ling-Temco-Vought Division, and in 1970 joined Apex Computer Services as a vice-president. He became head of the firm last June.

The sudden onset of computerization and the vast changes brought about in business and government by the speed of both the change and the computer process itself, have left the field in a fluid and still unformed state, he believes.

There is much underutilization and inefficient use of computers by many firms today, Jones asserted. The field, he said, needs "the sense of exactness and thoroughness" that marks the professional in music.

He sees as his chief goal with Apex the achievement of "optimum productivity" with the computer, using it as any other management tool rather than as some mysterious and glamorous adjunct to prosaic daily business functions.

Used Computer Exchange to Publish Current Buying, Selling Prices

BEACHWOOD, Ohio – A new service, "oriented toward developing the retail level for buyers and sellers" of used computers, has been announced by the American Computer Exchange, Inc.

Through planned publication of all transactions that have occurred within the first two months of the service, users can see what the various machines sold for, exclusive of "middleman charges," explained Larry Donat, vice-president.

Currently in the used computer market, he said, information on the buying and selling prices of equipment is rather closely held, because dealers are "trying to buy low and sell high," he said.

"With published prices, dealers and brokers will have to work within a 5% range if they want to compete," he predicted.

"The sellers will be selling a little bit higher, and the buyers buying a little bit lower, so the stabilization will take place somewhere between wholesale and what is now retail," he said.

The exchange provides, through direct mail and advertising, listings of machinery for sale. After ascertaining serious buyers, it puts buyer and seller in contact with each other and also offers the parties "a one-stop service charge," according to Donet.

The exchange charges 5% of the sale price from the seller, and offers the parties suggested contracts for negotiating the transaction, arrangements for transportation and refurbishing, site planning and installation.

Orders & Installations

The Jet Propulsion Laboratory, Pasadena, Calif., has ordered two Xerox Sigma 5 systems. One system will be used for on-line processing of information received from unmanned spacecraft and the other will handle software development and serve as a backup system.

Chicago Bridge & Iron Co. has installed an IBM 370/165 to aid in engineering and design problems.

Ford Motor Co. has ordered a Burroughs B6700 to be used as the central computer in Ford's Supply On-Line Management Information System.

Westvaco Corp. has ordered a Measurex paper machine control system for its Covington, Va., mill. The system regulates the weight and moisture content of coated bleached board.

Philip Morris Inc. has ordered a Xerox Sigma 8 to be used by 30 of the company's scientific laboratories for chemical and physical research. The new machine will replace a Sigma 5.

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Romania to Spend $200 Million on 5-Year DP Plan

By Bohdan O. Szuprowicz
Special to Computerworld

The Central Committee of the Romanian Communist Party has finalized specific plans for introduction of automation and management information systems for the 1970s and approved the expenditure of over $200 million during the current 1971-1975 Five Year Plan.

By 1975, Romania expects to have 80 computation centers in operation serving at least 400 corporations and individual industrial associations all drawing upon the resources of a central national application programs library.

During the second half of the 1970s (1976-1980) Romania expects to develop sufficient regional computation centers to provide one for each of the 38 administrative regions in the country. In that period the country will also introduce data communications systems and complete an integrated national information processing network.

In addition, starting in 1974 all projects for new enterprises will have to incorporate into their own data processing systems the capability to interface with the national network.

Streamlining Inventory

Present plans include streamlining the Romanian computer inventory by concentrating on three basic equipment sources. These include intensified domestic production of Felix C256 computers which are licensed Romanian versions of the French CII Iris 50 machines; purchases of Riad computer systems from other Comecon countries; and from the West, primarily IBM equipment.

There are presently about 60 computers installed in Romania including 11 CII Iris 50 and Felix C256 machines. There are also several IBM 360/30 and 40 models in use and a few ICL 1900 series as well as older British Elliott 803 machines.

Siemens, NCR, Japanese Neac as well as Soviet and East European computers are also in use.

By cutting down on the number of equipment suppliers, Romania hopes to avoid the problems experienced in earlier years by Hungary and Czechoslovakia where at one time only about 60 computers were installed by 27 different suppliers, creating significant training, software, maintenance and operational problems.

Romania expects to have a total of at least 100 computers installed and in operation by 1975 of which about 50 will be Felix C256 machines manufactured locally.

Although the first four Felix C256s were built in 1971, Romania must have experienced either production or operational problems, because no more than 7 are expected to be operational by mid-1973.

Yet the country plans to increase the production of the Felix computers to as many as 50/yr in 1975, presumably with the objective of exporting some machines.

The Felix systems are used with magnetic tape units with recording speeds of 12- to 60 kbyte/sec and disk drives of 6M byte capacity. Line printers in use are in the 800 line/min category.

A relatively large percentage of the computer installations in Romania today are operated at universities and colleges which also serve as service bureaus for local industries. There are nine regional computation centers in Romania today accessible to any user and the number of such centers will increase to 17 by year-end.

One of the first and most valuable applications of management information systems in Romania were programs controlling the allocation of building materials in the construction industry and forecasting of demand for future years.

Educating Future DPers

The Department of Economic Cybernetics of the Academy of Economic Sciences in Bucharest plays a special role in the education and training of future computer users in Romania. Students undergo a five-year program leading toward specialization in computer sciences. During that time they are required to complete 10 computer application programs but are given only eight computer runs per program due to limited machine time.

By 1975 Romania hopes to have 20,000 programmers, analysts and operators trained and another 8,000 trained as service and maintenance personnel.

Metal for Modems

At the Eastern Division of GTE Sylvania, a tape-controlled machining center fabricates metal parts for data modems used by the U.S. military in a worldwide communications satellite system.

GE on Display in Moscow

MOSCOW – GE has been displaying the capabilities of its worldwide data processing network to audiences here at the Electronmash/73 show. It is believed to be the first demonstration of U.S. time-sharing here.

"A special dial-up telephone link from Moscow to London will allow us to interact with the GE supercenter in Ohio" for the demonstration, according to Dr. James Castle, GE marketing manager.

Executive Corner

■ R.O. Grant Jr. has been elected president of Computerecords Inc., a Columbia, S.C., service bureau. Grant, formerly an executive vice-president, has been with the firm since 1970.

■ William J. Texido has been named president of Itel Investment Management Corp. Texido was previously vice-president, finance and administration, for Itel's Data Products Group.

■ John J. Donovan, associate professor of electrical engineering at MIT, has been elected to the board of directors of Softech, Inc.

■ Robert J. Brown, senior vice-president, and Dermott Noonan, vice-president, finance administration, have been elected to the board of directors of Potter Instrument Co.

■ John P. Howland, president and chief executive officer of Westpoint Pepperell, has been elected a director of Pitney Bowes; Fred T. Allen, president and chief executive officer of Pitney Bowes, is the new chairman of the executive committee.

■ A. Marshall Cheney, vice-president, marketing, has been elected to the board of directors of Brandon Applied Systems, Inc., and Ury Beary has been elected secretary-treasurer of the corporation.

■ Paul L. Kartzke, retired president and chief executive officer of Shell Canada Ltd., has been named to Cubic Corp.'s board of directors.

■ Richard A. Willey, national sales manager of Computer Communications, Inc., has been named a vice-president.

■ J.P. Ray has been elected chairman of the executive committee of the board of directors of Datapoint Corp. Harold E. O'Kelley will succeed him as president.

■ Noel E. Porter has been elected to the board of directors of Hewlett-Packard Co.

■ Barry M. Harder has been elected chairman of the board of Entrex, Inc. David Barber becomes president and chief executive officer.

■ Leon J. Satero has been elected president of American Data Preparation Corp.

■ Frank Ilcin has been named president of Chi Corp.

■ Fred W. Richter Jr. has been named vice-president of Datamatics Management Services, Inc.

■ John P. Courtney has been appointed vice-president, marketing, for Computer Task Group, Inc.

■ Ralph L. Phillips, an international public affairs advisor for Mobil Oil Corp., was elected a director of DPF, Inc. and Michael J. Creedon was named executive vice-president, marketing.

■ George H. Geick has been appointed a vice-president of Sperry Rand Corp. and will head a new corporate office in Washington, D.C. Harry A. Steinberg will succeed Geick as executive vice-president, worldwide marketing and services.

■ John W. Brackett, an original founder of Softech, Inc., has been named vice-president, software production, for the firm.

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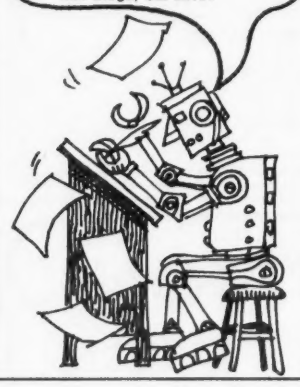

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Data 100 Has Profitable Fourth Quarter

MINNEAPOLIS, Minn. – Data 100 Corp., remote batch equipment maker, has announced a profitable fourth quarter, with earnings of $211,000 or 7 cents a share, despite some additional accounting changes.

President Edward D. Orenstein said he expects "to report continuing increases in profitability from this point on.

"Earnings estimates of 60 to 80 cents a share in 1973, before extraordinary income from tax-loss carryforwards of an equal amount, appear to be reasonable," he added.

In the year, however, the firm showed a loss of almost $6 million or $2.94 a share, which includes a special charge of $701,000 from a cumulative effect on years prior to 1972 of a change in accounting principle.

In 1971, Data 100 lost $1.4 million in the quarter and had a restated loss of $5 million or $4.22 a share in the year.

Revenues rose sharply, up to $6.6 million from $1.4 million from the quarter a year ago and included $3.1 million of sales to Randolph Computer Corp. For the year, total revenue climbed to $13.1 million from $3.9 million.

Increased sales to end users are currently offsetting the effects of the new accounting principles, according to Orenstein.

Depreciation of terminals on lease to customers in 1973 will be over a five-year term instead of the seven-year period used previously.

The useful life of such equipment manufactured in 1970 and 1971 is seven years, and six years for equipment made in 1972.

In 1972, the firm reported the "if sold" value of equipment shipped was $31.5 million, and it expects this figure to reach $50 million in 1973.

A three-year sales agreement with Randolph accounted for as outright sales, will add between $10- and $14 million in revenues in 1973, the firm said.

Annual rental revenue totaled more than $5 million in 1972, and is expected to climb to about $14 million by the end of this year, the company said.

The firm also said it expects about 10% of 1973 revenue to come from sales to end users.

Nickels & Dimes

Lencor, formerly Computer Financial, has obtained a $2.5 million line of credit with First National City Bank of New York and FNCB (International-LA), and has sold $1.2 million in 8% convertible debentures. Proceeds will be used to expand two subsidiaries, CFI Memories and American Security Products.

$$$

Advanced Computer Techniques reported record nine-month and third-quarter sales and earnings. Nine month earnings totaled $86,500 on $2.7 million revenues.

$$$

Broadening the base: DPF's new subsidiary, **DPF Commercial**, is entering the general equipment leasing business.

$$$

The sale last November by **Victor Comptometer Corp.** of its unprofitable computer division resulted in a special charge of $1.9 million. But the firm still earned $3.3 million for the year ended Dec. 31, compared with $1.8 million a year ago.

$$$

Memorex this year will experience residual values for the first time, the firm said, on disk packs placed in 1968-69 and depreciated in four years. The amount will not become material until 1975 and beyond, the firm said.

Also this year, the majority of capital requirements will be provided by internal cash flow – another first, according to Memorex.

Tally Cuts Losses Despite Costs For New 2000 Line Printer Unit

KENT, Wash. – Despite "substantial development and start-up costs associated with the engineering, marketing and production" of Tally Corp.'s new Series 2000 line printer, the firm managed to reduce its losses for 1972 compared with those of 1971.

Revenues for the year rose 24% to $12.3 million from almost $10 million last year, while losses were cut to $1.4 million compared with $1.8 million in 1971.

President James E. Navarre reported customer commitment to date of $3.3 million for the Series 2000 printer.

Shipments of paper tape products increased in 1972, he said, and new applications, such as in the graphic arts and numerical control areas, should result in some further expansion of this business.

In addition, European sales volume should increase, he said.

Data General Ups 6-Month Earnings

SOUTHBORO, Mass. – Data General Corp. showed increased revenues and earnings compared with year-ago figures in the second quarter and six months ended March 17.

Sales in the quarter rose to $11.2 million from $6.3 million a year ago, while earnings climbed to $1.4 million or 17 cents a share compared with $786,000 or 10 cents a share in the same 1972 period.

Six-month earnings nearly doubled over those a year ago, reaching $2.6 million or 32 cents a share from $1.4 million or 17 cents a share as restated.

Revenues for the half-year also climbed, to almost $21 million, compared with $11.6 million in the year-ago period.

Acquisitions

Automatic Data Processing, Inc. has acquired **National Inventory Control Systems** of Portland, Ore., on a pooling-of-interests basis for approximately 170,000 shares of ADP stock.

The proposed merger of **Metridata Computing, Inc.** with **Rapidata, Inc.** has been terminated by mutual consent.

Two DP service firms, **Datatel, Inc.**, of Washington, D.C., and **Data Technology Corp.** of Baltimore, Md., have merged. The new corporation will retain the name Datatel.

Smyth Business Systems, Inc., a Canton, Ohio-based cash register sales and service firm, has acquired **Atlanta Computer Services.**

Apeco Corp., the parent company of Cascade Data, Inc., and **Van Dyk Research Corp.**, a Whippany, N.J.-based copier-duplicator maker, have agreed in principle to a merger with an indicated value of more than $45 million.

Tymshare, Inc. has acquired **Megasystems, Inc.**, of Philadelphia, Pa., for $207,500 in cash.

Tymshare has also agreed in principle to acquire **Allen-Babcock Computing, Inc.** of Los Angeles.

Cummins-Chicago Corp. and **Allison Coupon Co., Inc.** have merged to become Cummins-Allison Corp. The new firm has moved headquarters from Chicago to Glenview, Ill.

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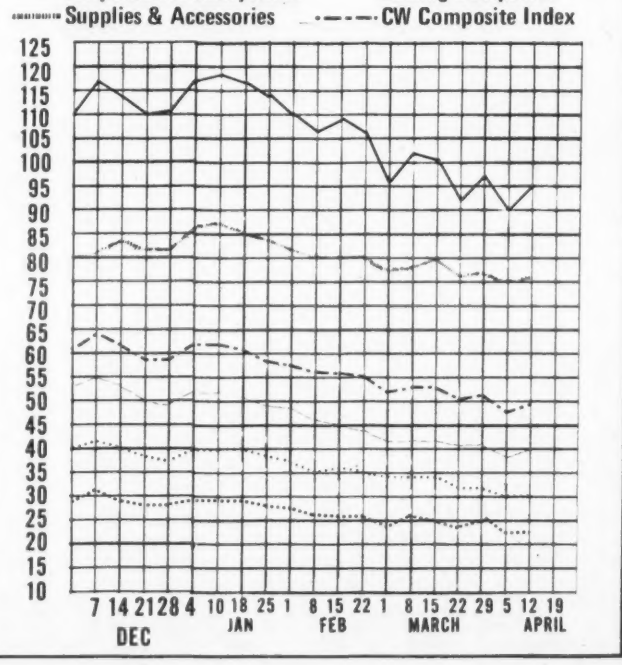
EXCH		1972-73 RANGE (1)	CLOSE APR 12 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 3	1 1/2	+ 1/4	+20.0
A	APPLIED DATA RES.	3- 7	2 7/8	- 1/8	-4.1
O	APPLIED LOGIC	1- 4	2 1/8	0	0.0
N	AUTOMATIC DATA PROC	65- 99	72	+2 7/8	+4.1
O	BRANDON APPLIED SYST	1- 2	5/8	0	0.0
O	COMPUTER DIMENSIONS	3- 14	2 1/2	- 1/2	-16.6
O	COMPUTER DYNAMICS	1- 4	3/4	0	0.0
O	COMPUTER NETWORK	2- 7	1 3/4	0	0.0
N	COMPUTER SCIENCES	3- 10	3 1/4	- 3/8	-10.3
O	COMPUTER TASK GROUP	1- 2	1 1/2	0	0.0
O	COMPUTER TECHNOLOGY	2- 8	2 1/2	- 1/4	-9.0
O	COMPUTER USAGE	5- 14	5 3/4	0	0.0
O	COMRESS	1- 3	1/2	- 1/8	-20.0
O	COMSHARE	5- 10	6	0	0.0
N	CORDURA CORP	6- 28	8 7/8	+2 1/2	+39.2
O	DATATAB	3- 9	2 1/2	- 1/4	-9.0
O	EDP RESOURCES	1- 8	1 1/2	0	0.0
A	ELECT COMP PROG	1- 5	1 7/8	+ 3/4	+66.6
N	ELECTRONIC DATA SYS.	42- 65	44 1/8	+1 3/8	+3.2
O	INFORMATICS	3- 11	3 5/8	+ 1/8	+3.5
O	I.D.A. DATA CORP	1- 3	7/8	+ 1/8	+16.6
O	KEANE ASSOCIATES	4- 7	3 1/4	0	0.0
O	KEYDATA CORP	7- 13	7 7/8	+ 7/8	+12.5
O	LOGICON	4- 9	4 5/8	0	0.0
A	MANAGEMENT DATA	2- 10	2 1/2	0	0.0
O	NATIONAL CSS INC	8- 41	28 1/4	+7 1/4	+34.5
O	NATIONAL INFO SRVCS	1- 5	1 1/4	- 3/8	-23.0
P	ON LINE SYSTEMS INC	5- 19	15 3/8	+ 1/2	+3.3
N	PLANNING RESEARCH	3- 17	3 5/8	+ 1/8	+3.5
O	PROGRAMMING METHODS	20- 25	22 1/4	- 1/4	-1.1
O	PROGRAMMING & SYS	1- 2	1	+ 1/4	+33.3
O	RAPIDATA INC	5- 27	17	+4	+30.7
O	SCIENTIFIC COMPUTERS	1- 4	1 1/4	+ 1/8	+11.1
O	SIMPLICITY COMPUTER	1- 5	2	+ 1/8	+6.6
O	TBS COMPUTER CENTERS	3- 6	2 7/8	0	0.0
O	TCC INC	1- 3	1/2	0	0.0
O	TYMSHARE INC	7- 12	7 1/2	- 1/8	-1.6
O	UNITED DATA CENTER	5- 8	5	0	0.0
N	UNIVERSITY COMPUTING	7- 26	8 5/8	- 3/4	-8.0
A	URS SYSTEMS	5- 10	5 1/8	- 1/4	-4.6
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	20- 49	19 7/8	- 1/8	-0.6
O	ADVANCED MEMORY SYS	12- 23	15 1/8	+1	+7.0
N	AMPEX CORP	5- 15	5	0	0.0
O	ANDERSON JACOBSON	4- 8	5 1/2	0	0.0
O	BEEHIVE MEDICAL ELEC	1- 10	10	+1 1/4	+14.2
A	BOLT,BERANEK & NEW	5- 21	9	+ 1/8	+1.4
N	BUNKER-RAMO	6- 14	6 3/8	+ 1/4	+4.0
A	CALCOMP	9- 25	10 3/4	+ 1/4	+2.3
O	CAMBRIDGE MEMORIES	9- 15	10 1/2	- 1/4	-2.3
O	CENTRONICS DATA COMP	6- 28	19 3/4	+ 1/2	+2.5
O	CODEX CORP	6- 25	12 1/2	0	0.0
O	COGNITRONICS	1- 5	1 5/8	0	0.0
O	COMPUTER COMMUN.	1- 7	2	- 1/4	-11.1
A	COMPUTER EQUIPMENT	2- 4	2 1/4	- 1/8	-5.2
O	COMPUTER MACHINERY	7- 13	8 7/8	0	0.0
O	COMPUTER TRANSCEIVER	2- 9	2 1/4	- 3/8	-14.2
A	COMPUTEST	3- 9	4 7/8	+ 3/8	+8.3
N	CONRAC CORP	23- 39	23 3/4	+ 3/4	+3.2
A	DATA PRODUCTS CORP	3- 7	3 1/8	+ 1/8	+4.1
O	DATA RECOGNITION	1- 5	2 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	3 1/8	+ 1/8	+4.1
O	DI/AN CONTROLS	3- 8	2 3/4	0	0.0
N	ELECTRONIC M & M	3- 8	3 5/8	0	0.0
O	FABRI-TEK	2- 5	3 1/8	- 1/8	-3.8
O	GENERAL COMPUTER SYS	6- 16	7	0	0.0
N	GENERAL ELECTRIC	59- 74	64 1/4	+2 5/8	+4.2
N	HAZELTINE CORP	7- 13	7 1/2	+ 3/8	+5.2
O	INFOREX INC	14- 36	13 5/8	0	0.0
O	INFORMATION DISPLAYS	1- 5	7/8	+ 1/8	+16.6
O	INFORMATION INTL INC	8- 25	11 1/2	- 1/4	-2.1
A	LUNDY ELECTRONICS	5- 14	5 3/8	- 7/8	-14.0
O	MANAGEMENT ASSIST	1- 1	3/8	0	0.0
A	MILGO ELECTRONICS	15- 44	19 3/4	-1 1/4	-5.9
N	MOHAWK DATA SCI	6- 27	6 1/8	- 1/4	-3.9
O	ODEC COMPUTER SYST.	3- 12	3 3/4	0	0.0
O	OPTICAL SCANNING	2- 16	5	- 1/4	-4.7
O	PERTEC CORP	5- 17	5 1/4	- 3/8	-6.6
O	PHOTON	3- 15	3 3/4	(SUSPENDED)	
A	POTTER INSTRUMENT	5- 21	5 3/8	+ 1/8	+2.3
O	PRECISION INST.	2- 13	2 1/2	- 1/4	-9.0
O	RECOGNITION EQUIP	5- 15	4 3/4	0	0.0
N	SANDERS ASSOCIATES	10- 21	10 1/2	+1	+10.5
O	SCAN DATA	2- 13	2 3/8	0	0.0
O	STORAGE TECHNOLOGY	17- 39	22	+1 1/4	+6.0
O	SYCOR INC	7- 12	12 1/4	+2	+19.5
O	TALLY CORP.	3- 15	3 1/4	-2 5/8	-44.6
N	TEKTRONIX INC	34- 64	39 3/8	+3 1/8	+8.6
N	TELEX	4- 15	4	+ 1/8	+3.2
O	WILTEK INC	10- 26	13	+1	+8.3
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	7 1/2	+ 1/2	+7.1
A	BARRY WRIGHT	9- 14	9 1/8	+ 3/8	+4.2
A	DATA DOCUMENTS	17- 26	19 3/8	+ 5/8	+3.3
O	DUPLEX PRODUCTS INC	8- 16	8 1/2	+ 1/4	+3.0
N	ENNIS BUS. FORMS	6- 10	6	+ 1/8	+2.1
O	GRAHAM MAGNETICS	15- 27	15	+ 1/2	+3.4
O	GRAPHIC CONTROLS	10- 15	9 7/8	- 3/8	-3.6
N	3M COMPANY	76- 88	84 3/8	+3 1/8	+3.8
O	MOORE CORP LTD	42- 59	59	+ 5/8	+1.0
N	NASHUA CORP	48- 62	47 1/2	- 1/2	-1.0
O	REYNOLDS & REYNOLD	37- 77	48 3/8	+2 7/8	+6.3
O	STANDARD REGISTER	14- 20	18 1/4	+ 3/4	+4.2
O	TAB PRODUCTS CO	14- 23	14	0	0.0
N	UARCO	19- 28	19 3/8	+ 1/2	+2.6
A	WABASH MAGNETICS	6- 11	6 1/2	+ 1/4	+4.0
N	WALLACE BUS FORMS	21- 26	21 1/2	- 1/2	-2.2
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	147-244	234 5/8	+13	+5.8
N	COLLINS RADIO	14- 27	21 1/2	- 1/2	-2.2
N	CONTROL DATA CORP	42- 78	50 1/4	+6	+13.5
O	DATA GENERAL CORP	36-131	43	+5 3/4	+15.4
O	DIGITAL COMP CONTROL	3- 25	3 3/8	+ 1/4	+8.0
N	DIGITAL EQUIPMENT	72-105	84	+3 1/4	+4.0
N	ELECTRONIC ASSOC.	6- 13	6 1/2	0	0.0
A	ELECTRONIC ENGINEER.	6- 14	10 3/4	+1 1/2	+16.2
N	FOXBORO	23- 41	27 3/8	+1 3/4	+6.8
O	GENERAL AUTOMATION	13- 55	34 1/2	+5	+16.9
O	GRI COMPUTER CORP	1- 5	1 3/8	+ 1/4	+22.2
N	HEWLETT-PACKARD CO	46- 94	84 1/2	+3 1/8	+3.8
N	HONEYWELL INC	106-170	117 1/8	+2 1/8	+1.8
N	IBM	333-451	432 1/4	+9 3/8	+2.2
O	INTERDATA INC	7- 16	11	+2 1/2	+29.4
N	MEMOREX	7- 38	6 1/2	- 5/8	-8.7
O	MICRODATA CORP	5- 10	6 3/4	- 1/2	-6.8
N	NCR	27- 38	31 1/2	+2 5/8	+9.0
N	RAYTHEON CO	27- 47	30 3/4	+1 7/8	+6.4
N	SPERRY RAND	30- 50	40	- 3/4	-1.8
A	SYSTEMS ENG. LABS	4- 16	4 1/4	- 1/2	-10.5
N	VARIAN ASSOCIATES	14- 22	14	+ 1/2	+3.7
N	WANG LABS.	18- 61	20	+1 1/8	+5.9
N	XEROX CORP	121-172	153 3/8	+5 3/4	+3.8
	LEASING COMPANIES				
A	BOOTHE COMPUTER	2- 18	2 3/8	- 1/8	-5.0
O	BRESNAHAN COMP.	1- 3	1 1/8	0	0.0
O	COMDISCO INC	3- 18	11 1/4	- 7/8	-7.2
O	COMMERCE GROUP CORP	3- 11	3 1/4	- 7/8	-21.2
O	COMPUTER EXCHANGE	1- 3	5/8	0	0.0
A	COMPUTER INVSTRS GRP	4- 14	4	0	0.0
O	COMP. INSTALLATIONS	2- 5	2	0	0.0
N	DPF INC	5- 13	6	- 1/8	-2.0
M	DATRONIC RENTAL	2- 4	2	0	0.0
A	DCL INC	2- 10	1 5/8	- 1/8	-7.1
A	DEARBORN-STORM	15- 26	17 3/8	+1 3/4	+11.1
A	DPA, INC.	5- 8	5 1/8	- 7/8	-14.5
A	GRANITE MGT	3- 11	3 1/2	- 1/4	-6.6
A	GREYHOUND COMPUTER	4- 11	4 5/8	+ 1/2	+12.1
A	ITEL	7- 12	7 3/8	0	0.0
N	LEASCO CORP	9- 24	9 3/4	-1 1/8	-10.3
O	LEASPAC CORP	6- 15	7 3/8	+ 1/8	+1.7
O	LECTRO MGT INC	1- 4	1 1/8	0	0.0
A	ROCKWOOD COMPUTER	2- 7	1 7/8	+ 1/4	+15.3
O	SYSTEMS CAPITAL	3- 20	8 1/4	+1 3/8	+20.0
N	U.S. LEASING	19- 35	25 5/8	+1 1/8	+4.5

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

COMPUTER STOCKS TRADING INDEX



Earnings Reports

AUTEX
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.14	$.10
Revenue	1,293,864	946,153
Tax Cred	14,000	18,000
Earnings	106,144	54,333

COMPUTER INVESTORS GROUP
Nine Months Ended Dec. 31

	1972	a1971
Shr Ernd	$.38	$.73
Revenue	11,806,610	9,703,509
Spec Cred	.....	b28,960
Earnings	748,543	1,508,924

a-Restated. b-Gain on repurchase of a portion of the company's debentures at less than principal amount.

COMPUTER INSTRUMENTS
Year Ended Dec. 31

	a1972	1971
Shr Ernd	$.11	.....
Revenue	4,515,596	$3,642,094
Spec Cred	b76,900	.....
Earnings	173,774	(387,956)

a-Preliminary. b-Tax-loss carryforward.

COMPUTER USAGE
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.13	$.05
Revenue	609,049	783,612
Tax Cred	50,612	19,000
Earnings	108,828	44,524

ALGOREX DATA
Six Months Ended Dec. 31

	1972	1971
Shr Ernd	$.02	.....
Revenue	675,999	$404,288
Earnings	40,708	(167,296)

GRAPHIC SCIENCES
Three Months Ended Dec. 31

	a1972	1971
Shr Ernd	$.08	$.04
Revenue	2,802,000	2,174,000
bSpec Cred	71,000	61,000
Earnings	253,000	121,000
6 Mo Shr	$.21	$.06
Revenue	5,810,000	4,226,000
bSpec Cred	260,000	95,000
Earnings	653,000	186,000

a-Includes 100% of the operations of a subsidiary previously 80%-owned by the company. The remaining 20% interest was purchased during the first quarter of fiscal 1972. b-In 1972, represents tax-loss carryforward and in the six months recovery of previously written-off investment; in 1971, tax-loss carryforward.

LEASCO
Year Ended Dec. 31

	1972	1971
Shr Ernd	$2.52	$1.93
Revenue	653,802,000	600,628,000
Earnings	40,981,000	31,038,000
3 Mo Shr	.52	.63
Revenue	169,534,000	155,402,000
Earnings	8,571,000	10,164,000

ANDERSON JACOBSON
Three Months Ended Dec. 31

	1972	1971
Shr Ernd	$.04	$.01
Revenue	1,461,030	1,113,054
Earnings	99,590	34,239
9 Mo Shr	.10	.04
Revenue	3,964,105	3,129,505
aSpec Cred	36,694	.....
Earnings	262,284	110,300

a-Gain on sale of land.

SCANTLIN ELECTRONICS
Year Ended Dec. 31

	1972	1971
Shr Ernd	.....	$.65
Revenue	$8,906,000	6,650,000
Spec Cred	357,000	3,315,000
Earnings	(2,956,000)	1,373,000

TYMSHARE
Year Ended Dec. 31

	1972	1971
Shr Ernd	$.32	$.13
Revenue	15,774,526	12,519,859
Tax Cred	428,000	162,000
Earnings	936,414	365,275

COMPUSAMP
Year Ended Dec. 31

	1972	1971
Shr Ernd	.....	$.13
Revenue	$6,529,687	2,492,569
Spec Cred	.....	59,000
Earnings	(73,902)	118,070

SCAN-DATA
Year Ended Dec. 31

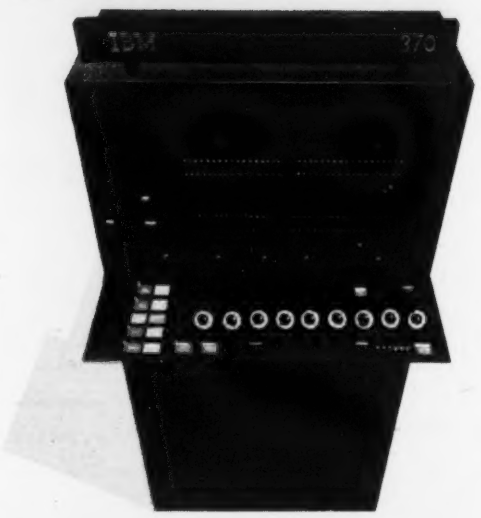
	1972	a1971
Revenue	$4,800,000	$3,125,840
Spec Chg	d695,000	.....
Loss	1,300,000	994,555

a-Restated. d-Loss from deferred marketing expenses, depreciation of obsolete system, termination of leases previously accounted for as sales, and releasing agreements.

STORAGE TECHNOLOGY
Year Ended Dec. 29

	1972	1971
Shr Ernd	$1.14	.....
Revenue	26,311,000	$3,664,000
Tax Cred	1,378,000	.....
Earnings	3,722,000	(4,085,000)
3 Mo Shr	.51	.....
Revenue	9,129,000	1,937,000
Tax Cred	533,000	.....
Earnings	1,752,000	(231,000)

FOR $26,123 A MONTH, IBM WILL RENT YOU THIS:



FOR $25,022 A MONTH, ITEL WILL LEASE YOU THIS:

The big difference between IBM and ITEL shows up on your financial statement.

As an example, for $26,123 a month, IBM rents you a System/370 Central Processing Unit alone, but for $25,022, ITEL will give you the 370 CPU plus one megabyte of AMS Monolithic Memory, 8 ITEL disk drives plus controller, as well as 8 ITEL tape drives and one controller.

A full computer system for less than the IBM cost of the CPU alone.

Rented from IBM, the same complete system would cost you $51,405 per month, more than double the ITEL cost.

And that's only one example. We'll lease any kind of computer package (360 or 370) on 3- to 8-year terms at proportional savings. Which explains why we have $300 million of IBM computer equipment on lease right now.

When you're making a data processing move, you'll save big by calling the Data Products Group at ITEL—the financial alternative to IBM.

ITEL CORPORATION

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